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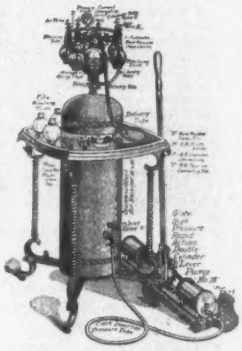

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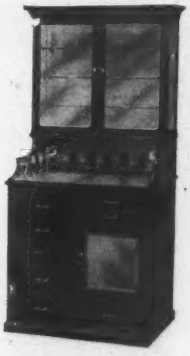

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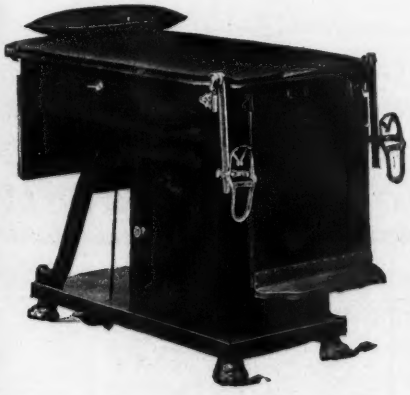

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Baltimore, Md.

INTUSSUSCEPTION.

The first few months of life of the human infant are full of peril, but this is from diseases and conditions of a medical rather than of a surgical character. Exceptionally, however, conditions occur that can only be combated by surgical means, and without which death is almost sure to follow. Amongst these conditions intussusception of the bowels occupies a very prominent position. Whilst this disease occurs in adults, it is especially an affection of infancy and childhood. It is one of the maladies that may occur almost at the time of birth, and certainly does occur in some cases in the first weeks of life. It is said that nearly one-third of all cases of intestinal obstruction are due to intussusception, and whilst this is certainly not the case in adults, it is the form of obstruction that is found generally in the case of children. My attention has been called to this affection, especially, by the fact that within a short time three cases of this trouble have come under my observation in children under twelve months of age. Kerley, in his book on "Diseases of Children," reports a case of intussusception in a previously healthy baby, two weeks of age. I have not seen a case of as tender age as that, but have met several recently in the first year of life. Generally the attack begins suddenly in previously healthy infants, with colicky pain, occurring paroxysmally, and vomiting ensues speedily, and is repeated frequently. There may at first have been moevements of the bowels, but soon absolute constipation takes place, with the exception that blood and mucous or pure blood are discharged from the anus. This is a very important sign and one which should always be sought for in cases of pain and vomiting with constipation, occurring in children. A tumor may often be felt in some portion of the abdominal cavity, more frequently, perhaps, in the right iliac region, but by no means confined to this area. This tumor is hard, elongated, often sausage shaped, and is more or less tender upon pressure. It is said that a tumor can be felt during life, in 86 per cent of cases. In many cases a finger introduced into the rectum can feel a protrusion of the invaginated bowel in the rectum. Holt says, the bowel can be felt in the rectum, or it protrudes through the anus in 50 per cent of cases, and that it may be felt in the rectum within twelve hours of the onset of the first symptoms. There is palor of the countenance, feeble pulse, mental

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apathy, and for a time relaxed abdominal walls. After a 24 to 48 hours tympanitis sets in with usually marked distension of the abdomen, progressive depression, and at last elevation of temperature, and acceleration of the pulse, which may be due to toxic absorption from the intestines, or to the occurrence of gangrene of the bowels. The pain in this condition is of great severity, causing the child to shriek in many cases, in a very characteristic manner. Vomiting is almost always present, is projectile in character and consists of the bile stained contents of the stomach, and later of stercoraceous matter. In some cases convulsions occur, but not always, the countenance becomes pinched and anxious, the surface of the body cool and cyanotic ,the child becomes unconscious and dies in profound collapse. Death usually occurs within a week and the larger number die on the third day, and one-half of all cases by the fifth day. In some cases life is prolonged for some weeks and in a small number spontaneous recovery takes place. Cure sometimes results from spontaneous reduction. The telescoped bowel in some manner becomes reduced; in other cases recovery results from the sloughing of the intussusception, which is, however, not to be expected in infants, nor indeed in adults, but does occur at times in both. Of fifty-two cases recorded by J. Lewis Smith, seven were cured spontaneously in this manner. The most frequent variety of intussusception is the ilio-caecal, in which the ileum forces its way through the ileo-caecal valve, and in some cases traverses the whole length of the large intestine. Next in frequency is the colic variety, when the colon becomes invaginated, and lastly the enteric form, in which the intussusception is confined entirely to the small intestine. Sometimes intussusception is due to the presence of a Meckel's diverticulum. I had a case of this kind not long ago, but it occurred in an older child, a boy of about six years of age. Other cases of intussusception might be due to the presence of indigestible matter, which by causing irregular contraction of the intestines might eventuate in invagination. The prognosis, then, of these conditions is very serious. Cases do occasionally recover, but we can in no manner foretell which cases will recover, and as most of them terminate fatally, it is necessary that they should be recognized early, and treated promptly. The symptoms which call our attention to this condition are sudden, violent, spasmodic pain, vomiting, constipation, the discharge of bloody mucus or blood from the rectum, and the presence in many cases of an elongated tumor in some part of the abdominal cavity. Where these symptoms are present, treatment should be prompt and thorough. One of the most important factors in the treatment of the disease, is the avoidance of purgatives. If intussusception is present, purgatives can only do harm. An attempt to effect reduction of the intussusception may be made by the injection of luke-warm water or air into the rectum. The buttocks should be elevated to an angle of 45 degrees or even more, and water from a fountain syringe or other douche held at an elevation, should be allowed to run slowly into the rectum. Some remarkable cures have been obtained by the employment of these methods, even after the lapse of some days. Dr. Kerley in cases of this character sends at once for a surgeon, but in the meanwhile he uses water pressure from a fountain syringe held at an elevation of four feet. He makes a short attempt of only five minutes duration, and reports a very remarkable case of a baby of nine months of age with invagination which could be felt in the rectum and which had been six days in existence. The child was pulseless, unconscious, in profound collapse, with great abdominal distension and a scarcely audible heart beat could be distinguished with the stethoscope. He was afraid that rupture of the bowel would occur, but as the child's condition precluded an operation, water pressure was tried, and in a short time a large and offensive stood occurred, the condition was relieved and the child recovered. In another case he was also successful with

the same treatment. Some years ago I was called to a child who presented the symptoms of intussusception, and in a similar manner water was introduced into the rectum, the symptoms at once subsided and did not recur. In some cases, however, measures of this character have been tried and found wanting, and fortunate is it for all concerned if they have not been tried too long, hence a resort to surgical operation is the ultimate resource, without which death is almost a foregone certainty. These children of tender age are not well adapted to withstand severe surgical procedures. The abdominal incision should be made either in the middle line or over the apparent seat of the trouble. If the condition has not existed long, an effort should be made to reduce the invagination, but if it has been in existence for a sufficient length of time to produce marked stasis, and edema of the intestinal walls, with beginning or actual gangrene, it will be better in many cases not to attempt the reduction of the intussusception, but to satisfy ourselves with an enterostomy, introducing a tube into the bowel and allowing the contents to escape externally and subsequently when the condition of the child is better resection of the diseased parts may be done.

The following cases of intussusception in infants under twelve months of age have come under my observation during the present year.

Case 1.—M. P., female, age five months, admitted to University Hospital August 25, 1909, in the service of Dr. St. Clair Spruill. Temperature on admission 105, pulse 150, respiration 40. The child previously healthy until the 22d inst. was taken suddenly ill on that date. Screaming with pain the child drew up its knees and cried out as if the pain were in the abdomen; these pains came on in paroxysms. Purgatives were administered and the following day a small amount of bloody mucus was passed in two stools; there was vomiting from the beginning at intervals. Enemata were also administered without causing a movement of the bowels, except a bloody mucus. The child became rapidly worse and was brought to the University Hospital three days after the inception of the symptoms. At this time her condition was very serious, the respiration hurried, pulse weak and rapid, lips blueish in color, adbomen soft and somewhat distended, and there was a suspicion of a lump in the left upper quadrant of the abdomen; this, however, was not definitely made out. Leucocyte count 21600. Operation was performed at once under ether anaesthesia. An incision was made through the right rectus muscle. The cecum, with about three inches of the small intestines invaginated into it, was found on the left side of the abdomen in the region of the splenic flexure of the colon. There was complete collapse of the bowel below the obstruction, while above it the intestines were markedly distended. With but little effort the intussusception was reduced, there was no strangulation of the gut and it soon recovered its normal appearance. The caecum, however, was considerably thickened from invagination, a few interrupted sutures anchored the colon into its normal position and the operation was finished with the child in a fairly good condition. Subsequently the bowels moved twice rather freely, but convulsions soon supervened and death terminated the scene in a few hours.

Case 2.—E. P., age nine month, admitted to University Hospital April 24, 1909, in the service of Dr. R. Winslow. This child had had persistent vomiting for four days with no bowel movement, the abdomen was distended but not very rigid. Temperature on admission was 100, pulse 120, respiration 28. The attack came on suddenly in the previously healthy child. After admission to the hospital a high enema was administered, but was ineffectual. The abdomen was opened in the middle line, and an intussusception of the ileum into the caecum was found. This was reduced without much difficulty and the gut was found to be in a viable condition, though there was some thickening of the invaginated parts. About six inches of the ileum were invaginated

through the ileo-cecal valve. Subsequent to the operation vomiting ceased, the bowels moved freely and although for a while the temperature was elevated, reaching 105, with a pulse of 160 and respiration of 45, the symptoms soon subsided and the child made a good recovery.

Case 3.—M. F., age six months, admitted to the Hebrew Hospital August 29, 1909. Three days previously the child was taken sick and cried a great deal, the mother gave it a dose of castor oil, but without effect. The next day a physician was called in, who administered calomel to be followed by oil, but without beneficial effect. The next morning an enema was administered without causing a movement of the bowels, but blood was passed by the rectum. At the expiration of three days the child was brought to the hospital. It was a well developed and nourished infant, but in an extremely serious condition, almost comatose; pulse rapid and weak, 155 to the minute, respiration 30, temperature 101, abdomen markedly distended and tympanic and tender on pressure. It was almost a hopeless case, but an operation was undertaken, chloroform was administered, an incision made in the median line, and about five inches of the ileum was invaginated into itself and was carried through the ileo-caecal valve and invaginated into the cecum. This intussusception was found on the left side near the splenic flexure and not as was supposed before hand in the right iliac region. The bowel was released with difficulty and showed beginning gangrene. A rubber tube was placed in the gut and drainage of the intestines established externally. The child, however, did not recover from her collapsed condition and died three hours later.

These cases show the folloy of treating the acute abdominal conditions of children with purgatives, and of delaying to bring them to the attention of a surgeon at a period when operative porcedures may be followed by success. Any case in which there is vomiting, paroxysms of pain in the abdomen, constipation, and especially when there is a discharge of blood or bloody mucus from the rectum, should cause a most careful examination to be made by the attending physician, and unless the symptoms subside almost at once, should be seen by a competent surgeon with a view of operating for the relief of the condition, which at this time of life is almost certainly that of intussusception.

STRANGULATED HERNIA.

Notwithstanding the frequency of congenital hernia, it is somewhat remarkable that strangulation takes place so seldom. It does occur, however, in a certain small proportion of cases, but I am not aware of the exact proportion between the non-strangulated and the strangulated cases. I have recently operated on one case of strangulated inguinal hernia in an infant of three weeks of age, and my former assistant, Dr. A. A. Mathews, now of Spokane, whilst at the University Hospital, operated on one nine days of age. These cases do not present any special peculiarities but are attended by the ordinary symptoms of strangulated hernia; namely, vomiting, constipation, distension of the abdomen, and the presence of a painful lump in the groin. Notwithstanding the tender age of these patients the results of operation are good and recovery usually follows, if the operation has not been too long delayed. The question of an anesthetic in these cases is one of importance, and probably it would be better in most cases to administer chloroform rather than ether, owing to the possibly injurious effect of ether upon the respiratory passages of the child, or the operation may be done under local anaesthesia, if the condition of the patient appears to demand it. The patients operated on by myself and Dr. Mathews were under the influence of a general anesthetic, chloroform in the one case and ether in the other, and made excellent recoveries from both the anesthesia and the operation. I think it is an interesting question as to the best anesthetic for administration in these early cases of surgical disease,

and I should be pleased to have an expression of opinion on this point.

Case I.—F. H., age three weeks, admitted to University Hospital March 19, 1909, in the service of Dr. R. Winslow. This child was found to have a hernia on the right side extending into the scrotum, which was irreducible and presented the ordinary signs of strangulation. It is said that its bowels had not moved for four days, and that vomiting had been present for thirty-six hours, but we were unable to get any adequate history of the case. Operation was performed at once under ether anesthesia; the ordinary incision for inguinal hernia was made, and the sac found to contain bloody fluid, the gut was markedly obstructed but was glistening and with no evidence of gangrene, and was returned into the abdominal cavity. Vomiting ceased at once, the bowels moved promptly and the patient was discharged well in eight days.

Case 2.—Strangulated hernia, colored male, age nine days. Born in the outdoor maternity clinic of the University of Maryland, was perfectly well until the 8th day, when he had a violent crying spell, followed by persistent vomiting. The mother noticed a swelling in the child's left groin shortly after a choking spell. A student tried to reduce the hernia, but without success, and the next day the child was admitted to the University Hospital. My former assistant, Dr. A. A. Mathews, finding the child in a serious condition, with the pulse so rapid that it could not be counted, operated at once under chloroform anaethesia. The usual incision was made, the sac opened and the intestine found quite dark, but with a glistening surface, and was returned into the abdominal cavity, the sac tied, and two or three interrupted sutures introduced, closing the wound. The child began to improve at once and made an uninterrupted recovery.

APPENDICITIS.

Whilst appendicitis is very common in childhood, it occurs very seldom under twelve months of age, and I have not personally seen a case occurring under one year of age, nevertheless it does occur at times in very young infants. The youngest cases reported as far as I am aware, are those by Blumer and Shaw and by Fenger, the subjects being seven weeks old. I have not seen the original report of these cases, but they are mentioned in an article upon appendicitis in the 4th Vol. of Keen's Surgery, written by Dr. John B. Murphy, of Chicago. In these cases there is usually a preceding gastro-intestinal disorder, the onset is sudden, and the pains violent and continuous, convulsions are common, there is sometimes pain complained of in the pelvis, and a rectal examination reveals sensitiveness on the right side. Increased frequency of urination is often present, the skin over the appendiceal region is extremely sensitive, and a slight pinching of the skin causes severe pain. We must bear in mind the possibility of appendicitis occurring in young children, but before determining that such is the case a careful examination of the child's chest should be made, as it is a well known fact that pneumonia often causes abdominal disorders, pain, tympany, vomiting, and constipation to such a degree as to lead one to suspect that a serious abdominal lesion is present. When it can be made out that appendicitis is present, of course an operation should be performed, but the results are not such as to encourage us to expect a favorable termination of the case. Kirmison and Gumbellot, in their collection of cases of appendicitis in children, report nine under one year of age, all of which died; of twenty-six in the second year of age, seven recovered; all the fatal cases were not operated on, and the seven which recovered were operated on.

CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS.

About one hundred cases of this affection have been reported. The symptoms show themselves in from a few days to three weeks after birth, by vomiting, loss of weight and constipation. There is evidence of dilatation of the stomach, with waves of peristalsis from left to right, and a sausage-shape tumor may

be felt in the pyloric region, the infant rapidly becomes emaciated, and unless relieved by an operation, death from starvation occurs. The various surgical procedures that are applicable in similar conditions in adults, may be made use of in children, but apparently gastro-enterostomy is the operation that affords the best hope of success, as of twenty-five cases reported, eleven recovered and the subsequent histories of nine of these cases are excellent. Pylorectomy is too severe a procedure for young children, but good results have followed in some cases by stretching the pylorus according to the method of Loreta. Some of the methods of pyloroplasty have also been done with considerable success.

CONGENITAL MALFORMATION OF THE ANUS AND RECTUM.

Congenital defects of the lower end of the alimentary canal are said to occur about once in every 10,000 births, but this is probably an underestimate, since many cases are not recorded. These malformations are found more frequently in boys than in girls, and are often associated with other defects, notably with exstrophy of the bladder and hypospadias. There are various abnormalities of the anus and rectum, that are usually called imperforate anus and rectum, but which present a number of variations. To understand the method of production of these conditions, we must remember that the anus and rectum are developed separately. The rectum is formed from the primitive hind gut, and at the fourth month is in intimate association with the allantois, from which it is gradually differentiated by the growth of a septum, forming a separate canal, whilst the allantois subsequently forms the urinary bladder. The anus is an involution of the epiblast, which passes inwards to meet the rectum. The partition between the two pouches disappears, and the rectal canal is completed. When these processes fail to occur in a normal manner, some one of the following malformations are produced, according to the classification of Cooper, Gant and Abbe.

A.—Imperforate Anus.

1. Congenital narrowing of anus without complete occlusion, or without fecal fistulas elsewhere.

2. Closure of anus by thin membranous tissue.

3. Entire absence of anus, the rectum ending in a blind pouch at varying distances from the perineum.

4. Imperforate anus with fecal fistulae opening: (a) into uterus or vagina; (b) into male bladder or urethra; or (c) on the surface of the body.

B.—Imperforate Rectum, with Anus Normally Placed.

1. Membranous obstruction of the rectum.

2. Extensive obliteration or total absence of the rectum.

Symptoms and Diagnosis.—In some instances the anus appears normal, and it is only after the insertion of the finger that an obstruction is found to be present. Generally the anus is absent, and its normal location may be indicated by a slight depression, or there may be a perfectly smooth surface without any pit or hollow at all at the normal location of the outlet. When there is no external orifice, the condition will be speedily noticed by the physician or nurse, but when there is a normal looking anus, it may be some while before the absence of intestinal evacuations calls attention to the fact that something is wrong, and suggest the propriety of a rectal examination. In some cases the intestinal contents are discharged through unnatural channels, as the vagina or penis, or by means of fistulous tracts elsewhere. Most of these conditions are incompatible with life, but in a few cases life is not materially interfered with, especially when the gut opens into the vagina or vulva. The symptoms produced are those of intestinal obstruction, and they usually supervene promptly, vomiting, distension of the abdomen, obstipation, increased frequency of pulse, elevation of temperature, pain, fretfulness, crying, and if not relieved, collapse and death in from 48 hours to a week. In

some rare instances the child has been known to live several weeks and in one case three months without having any fecal movement.

Prognosis.—The prognosis is therefore most unfavorable in the majority of cases without operation, and in the few instances in which life is preserved by means of fistulous tracts, it is done at the expense of cleanliness, and with the subsequent mortification and discomfort of the patient. Even with operation both immediate and remote results are far from favorable, and statistics of operations show 50 per cent of mortality

Treatment.—The relief of these conditions can only be secured by surgical measures. If there are fistulous or other abnormal openings, sufficiently patent for the free evacuation of the bowels, operative procedure may be postponed until the child has reached a more favorable age, but this is practically limited to those cases with a vulvar or vaginal outlet. In the first variety, where there is congenital narrowing of the rectum, or anus, but without complete atresia, the case should be treated as one of stricture occurring from post-natal causes, and it may be stretched by the introduction of a finger or of a bougie. In some cases, however, it may be necessary to make an incision through the anus in order to permit the introduction of dilating objects, and, of course, subsequently, it would be necessary to introduce bougies from time to time, to prevent contraction.

The second variety, where the imperforate anus is due to a membrane is to be treated by incising the membrane and carefully trimming it off, after which the patency of the bowel is to be maintained by the introduction of a bougie or a finger.

In the third variety, where the anus is absent and the rectum terminates in a cul-de-sac some distance above the perineum, we have to deal with a much more serious condition than those that have just been mentioned. In this condition we may sometimes feel a bulging in the perineum, caused by the pressure of the meconium when the child cries, but, of course, at other times this is not possible. We may facilitate this method of examination by pressing upon the abdomen of the child, in order to force the intestinal contents down against the palpating finger. When this is the case operative procedures are undertaken and consist in making an incision at the site of the anus, down towards the coccyx, until the rectal pouch is reached, which is then opened, the contents allowed to escape, and the lower end of the bowel brought down and fastened to the skin. When the rectum terminates at a still higher level it may be necessary to excise the coccyx, and make an artificial anus at a higher point. If the rectal pouch cannot be reached from below, a left inguinal colostomy should be performed.

Fourth variety. In this condition there is an imperforate anus, but the rectum terminates in a fistulous communication with the vagina, urethra, bladder or surface of the body. The simplest of these conditions is where the rectum terminates in the vagina or vulva. In such cases the bowel empties itself freely and operation is not imperative until the child reaches a more mature age. Sooner or later, however, an operation becomes desirable. Generally a grooved director or a curved forceps may be passed through the recto-vaginal opening and made to impinge upon the integument of the perineum, at which point an opening is made. The rectum may be freed from the vaginal wall, brought down and sutured to the anal site and the opening in the vagina may likewise be closed by sutures. This recto-vaginal opening has frequently a sphincter implanted in the vaginal wall by means of which retention of the intestinal contents is secured. Where this is the case it may be proper to enclose this sphincter with two elliptic incisions and bring this abnormally placed sphincter to its normal location in the perineum. When the fecal fistula terminates in the urethra or bladder of the male, it is an extremely difficult condition to rectify by any plastic operation, still an attempt may be made to

reach the bowel, and to establish an anus in the perineum. Generally this will not succeed, and colostomy will have to be performed, or death will usually speedily ensue. Strange to say these cases are not always fatal; a case is reported where a man of middle age, whose rectum opened into his bladder, had continued to discharge the contents of the bowel through the urethra without discomfort or serious impairment of health. Where the fecal fistula opens upon the surface of the body, it may do so by various routes, but is most likely to terminate in the scrotum or penis. Sometimes, however, the opening may be found in the gluteal, sacral, or lumbar regions. If the opening is sufficiently large to prevent obstruction of the bowels, nothing is necessary to be done, until the child reaches a more favorable age for operation. When, however, the opening is small, and intestinal obstruction is threatened, or has actually taken place, the fistula may be incised or dilated sufficiently to permit the free escape of the intestinal contents, or if this is impossible colostomy remains as a last resort.

Fifth variety. With a normal anus and a membranous obstruction of the rectum. This condition will not be suspected until the failure of fecal movements, and symptoms of obstruction, cause a digital examination of the anus to be made, when it is found that the canal is obstructed by a partition more or less dense. This may be located an inch or more above the anus. In some cases this partition or membrane may be ruptured by the insertion of the finger, but generally it will be necessary to incise it with a bistoury, and then to thoroughly stretch it by means of bougies or the finger.

Sixth variety. This is where the anus is natural as to location and appearance but terminates in a blind extremity, whilst the rectum terminates at a greater or less distance above the anus, its extremity being often free in the peritoneal cavity. An attempt may be made to reach the bowel from the perineum but when this is manifestly impossible colostomy should be performed.

Case 1.—Baby S. was brought to the University Hospital on Feb. 11, 1909. He was born twenty-four hours ago. Perineum is smooth with no evidence of an anal opening, otherwise the child is normally developed. Urine mixed with meconium is discharged from the urethra, the abdomen is slightly distended but the child's general condition is excellent. Without an anesthetic an incision was made in the perineum and an attempt to reach the rectum was made, without success. A few whiffs of chloroform were therefore given and an incision made in the abdomen in the left iliac region, the muscles separated, and the sigmoid flexure sought for and brought out through the wound, a piece of gauze being placed beneath the bowel through the mesentery to prevent its retraction, and the angles of the wound sutured up to the bowel. The next day the gut was opened, a rubber drainage tube introduced into its proximal end, thus permitting the escape of the intestinal contents. Two days later the bowel was cut across and the ends sutured to the skin, establishing an artificial anus. The patient did well, the highest temperature being 100 degrees. Was discharged in eleven days.

Case 2.—Several years ago a somewhat similar case came under my observation in which the bowel extended as an abnormal tube along the perineum to the scrotum. This tract was dissected out, the mucous membrane of the rectum sutured to the skin, and the child made a good recovery. I have also seen several other cases of imperforate anus in my own practice, and in that of my colleagues. In one case occurring in my own practice, the people refused to have an operation performed and the child lived a week, before a fatal termination took place.

TRANSFUSION IN PELLAGRA, WITH REPORT OF CASES.*

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The existing uncertainty as to the etiology and as to the toxin or toxins producing the symptoms of pellagra, prohibit, at present, the formulating of a scientific or rational therapy. Any remedial or surgical measures employed must necessarily be based on empiricism and experimentation.

Study on the etiology of the disease, chiefly by Italian and German workers and more recently in this country, has led to three chief theories as to the cause of pellagra. Firstly, the maize or "zeist" theory, which holds that decomposition of the oils or "zein" of corn produces the poisons, causing pellagra. Secondly, the "verdet' 'theory of Lombroso, which claims that the growth of certain fungi, penicilli and aspergilli, on maize produces a toxin. The ingestion of this toxin—contining corn produces pellagra. Thirdly, the microbic or bacterial theory, suggested by Tizzoni, Panichi and others, which supposes that pellagra is due to a specific bacterium which grows on maize and elaborates characteristic toxins.

That maize, especially when exposed to moisture and heat, bears a close causative relation to pellagra is rather generally conceded. Whether the toxic principles are developed in the corn itself or whether maize is pathogenic only in so far that poisons can develop in it by the action of micro-organisms is still a matter of speculation.

A discussion as to the theories of the etiology of pellagra is beyond the scope of this paper. We shall confine ourselves to a consideration of the theories, experiments and facts bearing on the nature and action of the toxic substances of pellagra, no matter what be their origin and suggest the possibility of combatting these toxins in vivo by antagonistic substances formed in the body by natural or acquired immunity.

Granting, as seems justifiable, that pellagra is an intoxication, let us consider the work done as to the biologic actions of the toxins.

Tizzoni (1) has shown that by injecting the blood of a pellagrous patient into animals typical symptoms of the disease are produced. This may be explained by the passage of toxins from the affected to the non-affected animal, or, as Tizzoni suggests, to the transmission of living (toxin bearing?) bacteria specific of the disease.

Lombroso (2) claims to have produced typical pellagrous manifestations by the administration of an alcoholic extract of impure maize ("pellagrozein").

These experiments seemingly prove the existence of a toxic principle capable of producing pellagrous symptoms, laying aside any consideration as to their chemical, microbic or fungous origin.

Admitting, then, the existence of specific toxins, may we not rationally consider the probability that the body tissues form antibodies or anti-toxins to combat their action? Much of the late work on sera and toxins tends to answer this supposition in the affirmative.

Babes (3) and other workers have found in the serum of pellagrins a substance antagonistic to the extracts of damaged maize that is a specific anti-toxic body.

*Read before the National Conference on Pellagra at Columbia, S. C., November, 1909.

Giovanni and Gatti (4), from their work on pellagrous serum, conclude that the serum of pellagrins has a hemolytic action much above normal, demonstrating the presence of an antibody. They further claim to have demonstrated precipitative properties in pellagrous blood. D'Ormea (5), working independently, likewise concludes that there is a definite specific antibody developed in pellagrins.

Antonini and Marianni (6) claim that a definite immunity is developed in cured cases of pellagra and that the serum exhibits a definite antitoxic action against maize poisons. They have developed an artificial immunity in rats, rabbits and goats against pellagrous toxins. Finally they conclude that a serum therapy can be instituted in grave pellagra cases.

Accepting the statements of these workers we are led to the following conclusions:

(1) Pellagra is an intoxication.

(2) The toxic principles of pellagra exist in the blood of pellagrins and will produce pellagrous symptoms when transferred to other animals.

(3) Pellagrous serum exhibits definite precipitative, hemolytic and antitoxic properties.

(4) An artificial immunity can be produced in animals and exists in cured pellagrins.

Our work in pellagra was undertaken independently of any knowledge of the researches of others as to the existence of antibodies in pellagra. Being interested in the subject of transfusion and working on its effect in shock and hemorrhagic anemia in dogs, we were led to try transfusion in pellagra, at first, simply as a relief for the existing anemia in these cases. The possibility of the existence of a specific curative agent, of the nature of an antitoxin, prefamed in cured cases, and which might be transfused with the blood, very naturally suggested itself.

Through the kindness of Drs. McCafferty and Tisdale, of the Mt. Vernon Hospital, we were enabled to perform a transfusion in a severe case of pellagra, using a cured case of pellagra as the donor. As far as we are able to ascertain this is the first transfusion performed in pellagra (7). The results of this first transfusion were quite suggestive and led to further experimentation. The results and conclusions of some nine cases of pellagra, so far transfused, are noted in the second part of this paper.

The difficulty of securing cured cases as donors has forced us to employ normal, healthy individuals in a number of our transfusions. We have chosen these non-pellagrous donors from among persons living in the same surroundings eating the same food and subject to the same chances of infection as the patients themselves. It is possible that these donors have developed a certain amount of immunity and contain antitoxic bodies in their blood. Whether these antibodies be present or not, the amount of blood furnished on transfusion must, at least, combat the existing anemia and stimulate the protective and recuperative activities of the recipient.

It must be noted that the only medicinal agents used, in the recovered cases, were tonics of strychinine, forced feeding, and in some cases carbonate of iron.

In every case benefitted by transfusion the improvement was immediate, as shown by marked gain in weight within the first week, in one instance as much as eight and a half pounds. All the patients, two months after transfusion, are either apparently cured or markedly improved, and have gained from 15 to 34 pounds in weight.

Of the fatal cases, case No. 4 was moribund at the time of operation and died three hours after transfusion; case No. 7 received no appreciable amount of blood on transfusion; case No. 6 received practically no blood at the first operation, and at the second operation, when a pellagrous donor was used, while she received a good flow of blood, her condition, we felt, was hopeless.

We suggest the following conclusions:

(1) Transfusion offers a means of com-

batting the anemia, stimulating the recuperative functions and perhaps of furnishing antitoxic substances to pellagrins.

(2) The lessened mortality and marked improvement in transfused pellagrins leads us to anticipate the establishment of a serum therapy in the disease.

(3) Transfusion may be offered as a surgical therapeutic procedure in pellagrous cases pending the perfection of a successful serum therapy.

TRANSFUSION IN PELLAGRA.

The number of cases of pellagra so far treated by serum injection and direct transfusion of blood is too small to permit of final deductions as to their therapeutic value in the disease.

We attempt to give below a resume of the cases in which serum therapy and blood transfusion have been employed. The data for this report has been obtained from monographs and personal communications with the various workers.

The curative value of pellagrous serum has been chiefly tried by the Italians, Antonini and Marianni (8), using the serum of recently recovered typhoid types of pellagra, note cures in several severe cases. Their work was most carefully performed and the potency of the serum was tested on animals before being administered to patients. Lombroso, in a personal communication to the authors of this paper, comments on the work of Antonini and Marianni, and states that the use of serum is of undoubted value in the treatment of pellagra.

Dr. Lavinder, of the Marine Hospital and Public Health Service, has employed serum in the treatment of two cases of pellagra. The first case received but one injection of serum and died within three days of an intercurrent pneumonia. The second case received four injections and at first seemed to improve, but this was not continuous, and at the last report the patient was "steadily losing ground.'

The belief of the Italian workers in the efficiency of pellagrous serum will, we hope, lead to a more extensive trial of this most simple therapeutic measure and so furnish information as to its true value.

Besides our nine cases of direct blood transfusion in pellagra, which are given in detail below, we wish to note two other cases. Drs. Wood and Green (9), of Wilmington, N. C., transfusede a case of three years' duration. This case, which they state was in a "hopeless condition," received about six or eight ounces of blood on transfusion. No apparent improvement was noted and the patient died.

The second transfusion to be noted was performed by Drs. McCafferty and Tisdale, of the Mount Vernon Hospital, Mt. Vernon, Ala. The patient was transfused from a cured case of pellagra and received approximately a pint of blood. Five days after transfusion the skin lesions began to disappear and in fourteen days the patient was up and walking about.

TECHNIC.

The following cases were transfused either by the canula method of Crile or by the suture method of Carrel:

REPORT OF CASES.

Case 1.—Alice F., age 25, colored. Referred by Dr. McCafferty and Dr. Tisdale, Mt. Vernon, Ala. This patient has had pellagra for three weeks and presents on examination the characteristic skin lesions over the hands, arms, face and legs. There is a stomatitis so sever as to seriously interfere with nourishment, incontinence of the bowels, marked emaciation and asthenia. Hemoglobin, 70 per cent.

The patient is in a moribund condition.

Transfusion, August 3, 1908. The donor is a well-nourished negro woman who recovered from a severe attack of pellagra one year ago. There was a good transfer of blood for about twenty minutes.

August 4, 1908. Twenty-four hours after the operation the recipient shows marked signs of improvement both in her mental and general condition.

August 7, 1908. Four days after the trans-

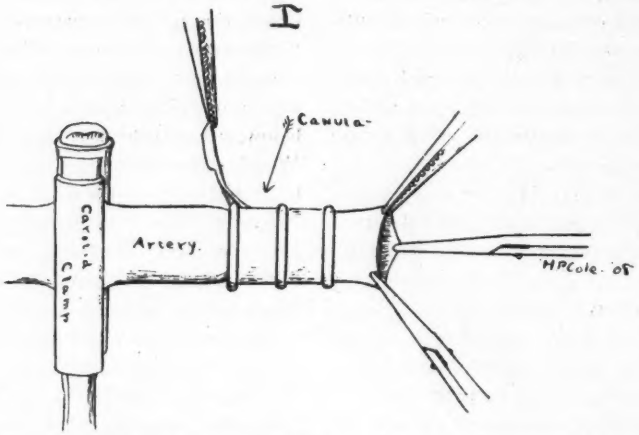

Fig. 1.—The artery of the donor is temporarily clamped on the proximal side by a rubber-covered carotid clamp. The free end has been threaded through a Crile canula. Three clamps at equi-distant points are placed about the arterial lumen.

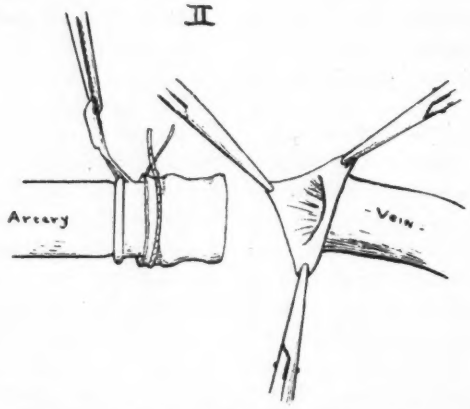

Fig. 2.—By means of the three clamps about the arterial lumen, the end of the artery has been everted and drawn back over the canula and there tied. The arterial intima presents outwards.

Three clamps are now placed at equi-distant points about the lumen of the recipient's vein, the two vessels are then approximated.

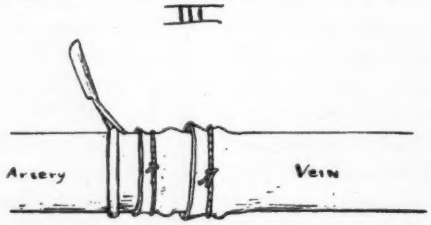

Fig. 3.—By means of the clamps the vein is drawn over the artery covered canula and tied about the lower ferule on the canula. The vein intima now lies in contact with the arterial intima.

The rubber-covered carotid clamp, now removed, permits the arterial blood to flow from the donor into the vein of the recipient.

fusion the patient has improved markedly and is walking about the ward.

This patient went on to a rapid recovery. She has presented no symptoms of the disease since the operation performed fourteen months ago. The recovery in this case was so immediate and complete as to be extremely suggestive.

Case 2.—Bessie B., age 22, white. Referred by D. D. Armstead, Campbell, Ala. For the past four years this patient has had attacks of sore mouth, diarrhea and indigestion, beginning in the Spring and lasting about six months each. During these attacks the patient was confined to her bed. About fourteen months ago a red eruption appeared over the backs of both hands and wrists. This was never painful and disapepared in a few weeks. The patient has had sore mouth ever since the eruption appeared and there have been four or five soft bowel movemetns a day for the past four months. For several weeks there have been marked mental and nervous symptoms; these are increasing in severity. Sensory symptoms have been present in the feet and head. In the past eight days there has appeared an erythema over the dorsum of each hand; this has extended well up on the fore arms, has become pigmented and has been associated with burning and pain. Coincident with this there has been an exacerbation of the mental and nervous symptoms. There has developed a pulse rate out of proportion to the temperature.

On examination the patient presents marked emaciation and asthenia. Weight, 60 pounds; average weight, 100 pounds. Hemoglobin, 75 per cent.

There is a dark, dry, pigmented eruption on the backs of both hands extending well up on the backs of both fore arms. There are marked mental and nervous symptoms. Muscular reflexes are increased.

Transfusion July 3, 1909. The donor is a strong, healthy male adult, a brother of the patient. The donor has never had pellagra. There was a good transfer of blood for thirty minutes. The donor had an attack of syncope upon leaving the operating room.

July 4. Twenty-four hours after the operation there are marked signs of improvement.

July 7. Four days after the operation the skin lesion began to desquamate.

The marked nervous and mental symptoms began to rapidly disappear and were almost entirely absent within a week from the day of transfusion. The sore mouth disappeared within four days, the bowel movements were less frequent after the fourth day, and entirely disappeared within three weeks.

July 13, ten days after the operation, the patient weighs 68½ pounds, a gain of 8½ pounds.

The patient returned home and has steadily improved. Three months after the operation she states that she is stronger and has gained about 15 pounds; that there are neither eruption, diarrhea nor mental symptoms.

This patient has made a gradual improvement from the day of operation and will eventually recover entirely.

Case 3.—Annie H., age 42, white. Referred by Dr. P. A. Trice, Morvin, Ala. One year ago this patient had an attack of diarrhea of six months duration; there is also an indefinite history of an erythema over the backs of both hands at this time. There was marked asthenia, anemia and emaciation during the attack. There is a history of nervous excitability, but no mental disturbances. There is no history of sore mouth.

On examination the patient shows indefinite signs of an old desquamative skin lesion over the backs of both hands, increased reflexes, asthenia, nervous excitability and a marked grade of anemia. There is considerable emaciation, the patient stating that she has lost 30 or 40 pounds in weight.

Transfusion July 18, 1909. The donor is a healthy adult male (patient's husband).

There was a good transfer of blood for twenty minutes.

July 21, three days after the operation, the patient shows definite signs of improvement.

Twelve weeks after the operation her physician writes that her physical condition is better, that she has gained 15 pounds in weight, that her anemia is much improved. The patient herself says that she is stronger than she has been for the past three years.

Case 4.—Mrs. T., age 27, white. Referred by Drs. Hand and Bailey, Demopolis, Ala. This patient developed an erythema over the backs of both hands six weeks ago. This extended to the fore arms, elbows, sides of the neck and upon the face. This has been associated with a marked stomatitis and nausea in the past three days. The stomatitis has been so severe in the past few days as to seriously interfere with feeding. There has been a profuse diarrhea, and an increasing asthenia, anemia and emaciation. The nervous symptoms have been pronounced in the last few days.

On examination the patient is found to be in a practically moribund condition; an ulcerating and deeply pigmented eruption covers the dorsal surfaces of both hands, fore arms and the sides of the neck. There is a deeply pigmented mask over the entire face. There is ulceration of the mouth, a swollen, blackened tongue protrudes from the parched and ulcerated lips, from which there constantly drools forth a fetid, slimy discharge. This pigmentation extends over the legs and feet as well.

The patient is markedly emaciated and presents a terminal stage of anemia. The reflexes are almost absent, there is incontinence marked anemia and frequent emesis. Pulse, 150-160.

Transfusion, July 11, 1909. Two donors. The first donor is a white adult female, who recovered a few weeks ago from a severe attack of pellagra. A good transfer of blood was obtained for ten minutes, when the transfusion was discontinued on account of the weakened condition of the donor.

A second transfusion was performed from a healthy adult male (the patient's husband), who has never had pellagra. A good transfer of blood was obtained for fifteen minutes. The transfusion was then discontinued on account of the weakened condition of the recipient.

This patient was in a hopeless condition at the time of operation and showed no signs of improvement after the operation. The patient died three hours after the operation.

Case 5.—Mrs. B., age 53, white. Referred by Dr. Bondurant, Mobile, Ala. This patient was treated by her family physician, Dr. O. G. Bruner, of Fort Deposit, Ala., for a persistent case of diarrhea extending over a preiod of two years. One year ago there appeared an eruption over the backs of both hands. This was followed by desquamation. This eruption reappeared in the spring of 1909, about six months before transfusion. A few weeks before transfusion the patient developed marked mental and nervous symptoms.

On examination there are remains of a desquamating skin lesion over both hands and forearms. There are constant involuntary muscle tremors, increased reflexes and the mental condition is that of constant delusions and at times a muttering delirium. There is asthenia and marked emaciation. Weight, 70 pounds; average weight, 100 pounds.

Transfusion, July 17, 1909. The donor is a healthy adult male (the patients' son), who has never had pellagra. There was a good transfer of blood for twenty-five minutes.

July 18, twenty-four hours after the operation, the nervous and mental condition is improved. This patient gained 8½ pounds in the first week, went on to a rapid recovery, and eleven weeks after the operation writes that the mental condition seems perfect; there are no symptoms of pellagra, and there has been a gain of 34 pounds in weight.

Case 6.—Mrs. H., age 50, white. Referred by Dr. Sarah A. Castle, Meridian, Miss. This patient has had attacks of diarrhea for the past two years. Four months ago the patient had an attack of diarrhea of two weeks' duration, and this was followed by a stomatitis that has grown very severe and persists. An eruption appeared on

the hands about four weeks ago and extended over the forearms, face and legs. There have been marked nervous and mental symptoms for the past six weeks. This condition has been that of acute delirium at times. There have been severe sensory and motor symptoms.

There is incontinence of the bowels, a condition present for about a week.

On examination there is found an almost hopeless anemia and emaciation. A desquamating skin lesion extended over the hands, arms, legs and face. There is a drooling, fetid discharge from the mouth; there is a marked, stomatitis, incontinence of the bowels and at times a low muttering delirium.

Transfusion July 22, 1909. The donor is an arteriosclerotic, plethoric male (the patient's husband), who has never had pellagra; age about 60.

The anastamosis was accomplished with a great deal of difficulty because of the extreme degree of atheroma present in the donor's radial artery. There was only a very small amount of blood transferred.

Transfusion August 17, 1909. This patient made no definite signs of improvement and was again transfused twenty-six days after the first attempt. At this time she was in the same physical condition except for a much more severe anemia.

The donor is a female, age 18 (the patients' daughter). This donor recovered from a definite attack of pellagra two years ago. There was a good transfer of blood for twenty-five minutes.

August 18, 1909, twenty-four hours after the operation, there is an aggravation of the mental symptoms.

August 23, 1909. One week after the operation the patient has shown no definite signs of improvement except that the stomatitis has cleared up to some extent. Death occurred four weeks after transfusion.

Case 7.—Mr. G., age 30, white. Referred by Dr. J. L. Bryan, Greenville, Ala. Six months ago this patient developed an erythema followed by pigmentation over the backs of both hands and forearms. During this period there has developed a severe diarrhea, mental deterioration and an extreme degree of emaciation.

On examination, this patient presents marked asthenia and anemia. There are pronounced motor and sensory disturbances, a desquamating skin lesion still present over the backs of both hands and forearms. The sore mouth and diarrhea, while present, are not severe at this time.

Transfusion July 25, 1909. The donor is a 14-year-old boy (the patients' nephew), who has never had pellagra. Because of the extreme restlessness of the youth only a small amount of blood was transfused in the course of twenty minutes.

July 26. Twenty-four hours after the transfusion the patient shows no sign of improvement.

This patient became steadily worse and died August 20, 1909, twenty-six days after the transfusion.

This case was not transfused with any appreciable amount of blood.

Case 8.—Mrs. S. H., age 30, white. Referred by Dr. Armstead, Nanafalia, Ala. This patieent had a severe attack of diarrhea about one year ago; this was associated with sore mouth and marked nervous and mental symptoms, duration two months. There were no skin lesions at this time.

The present attack began three weeks ago with an erythema on the backs of the hand and wrists. This went on to the induration, pigmentation and desquamation characteristic of the disease. This attack is associated with a severe stomatitis. During this attack the patient has had marked nervous and mental symptoms, and has become emaciated and anemic.

On examination there are the remains of a desquamating skin lesion over the dorsum of the hands, wrists, forearms and elbows. There is stomatitis and a mild grade of diarr-

hea. The patient has lost about 40 pounds in weight.

Transfusion July 25, 1909. The donor is a healthy adult male (the patient's husband) who has never had pellagra. There was an excellent transfer of blood for fifteen minutes when the operation was discontinued as the recipient showed signs of cocainism.

July 26, twenty-four hours after the operation, the patient shows an improvement in her mental and nervous condition.

Ten weeks after the operation her physician writes that the patient has improved wonderfully since the operation. There is no skin lesion, no sore mouth, no diarrhea. The mental and nervous symptoms are much improved. The patient says that she feels better than she has in five years. She has gained about 20 pounds in weight and is 100 per cent better than before the operation, according to her physician's statement.

Case 9.—Mrs. M., age 36, white. Referred by Dr. McMillan. This patient has had attacks of severe diarrhea every Spring for six or seven years. These attacks were of about one months' duration and cleared up without medical treatment.

Eighteen months ago the patient developed, for the first time, an eruption over the backs of the hands. This eruption lasted about one month and went on to desquamation without pigmentation. At this time the patient developed a sore mouth and salivation, which was present about one month. The patient had another attack of diarrhea about four months ago; at this time she was anaemic, emaciated and showed marked nervous symptoms.

Four weeks ago sore mouth again appeared associated with diarrhea, anaemia, emaciation, asthenia and an erythema, which extended over the backs of both hands well up on the forearms. This eruption became pigmented and desquamated. At this time the nervous symptoms were aggravated and there developed a mild grade of dementia.

An interesting point in this case is that there was a suspicion of diabetes for several years and the patient was placed on a diet consisting largely of cornbread.

On examination she presents the remains of a desquamating skin lesion over the dorsal surfaces of both arms and hands. There is asthenia, emaciation and anemia. Hemoglobin, 70 per cent. Weight, 100 pounds; average weight, 100 pounds. There is a profuse diarrhea. The mental condition at times is that of a mild dementia.

Transfusion October 18, 1909. The donor is a healthy adult male (the patient's husband) who has never had pellagra. There was a good transfer of blood for thirty minutes.

October 19, twenty-four hours after the operation, there is a distinct improvement in the mental condition.

October 25, one week after the operation, the patient has improved markedly in general condition, the mental symptoms have disappeared, the appetite is much improved, and the patient has gained 7½ pounds in weight.

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202 Conti Street.

THE TREATMENT OF PELLAGRA.

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Before taking up the subject of the treatment of pellagra, I think the question of prophylaxis should be mentioned. Foods consisting of corn meal or any of the ordinary products of corn should be selected with great care. Corn containing rotten or moulded grains should not be made into food products, and only the best, well-ripened and dried corn should be used for meal, grits, etc. Corn bread, grits, mush, and foods made from corn products should be thoroughly cooked and should be eaten while fresh. Corn products should be excluded from the diet of a pellagrous patient.

A patient suffering from pellagra should, to a certain extent, be quarantined or separated from close association with other members of the family, and I believe that the room, bed clothing, and vessels should be disinfected, for it is a fact that husband and wife have had the disease, one apparently following the other. It is also stated on good authority that one family who moved into a dwelling after another family who had suffered from pellagra, contracted the disease. I think at least there would be nothing lost with the practice of ordinary care in respect to quarantine and segregation.

While I shall not go, by any means, into the details of diagnosis, I think it should be urged that every practitioner should keep this disease in mind and that as early a diagnosis as possible should be made. Recently, I saw one case in which the first symptoms of pellagra appeared as a uterine hemorrhage which lasted for three or four weeks and was followed by severe diarrhea and stomatitis, when finally a peculiar dusky, brownish red discoloration of the skin appeared on the backs of the hands and knuckles of the fingers. Any condition of the uterus, vagina, the intestinal tract or the mouth which does not conform to the symptoms of any other disease should be at once regarded as suspicious with respect to pellagra.

With reference to the treatment, I shall consider first the method of handling the skin manifestations. The erathymatous type requires only cleanliness and applications of boracic acid lotion, but if blebs develop on the face, neck, backs of the hands and feet, more extensive treatment is demanded. The blebs should be punctured and drained, the surface should be washed with green soap and warm water once a day, sponged with boracic acid lotion and an ointment consisting of boric acid gr. viii., zinc oxide, gr. lx., lanolin and vaseline equal parts to make one ounce.

The ointment should be spread on rather profusely and the parts bound up, and the dressing should be made once or twice a day, depending upon the severity of the case. I have found this method of treatment to agree with the skin lesions better than any I have tried.

If the patient is up and going about, a general tub bath with soap and water, followed with a salt rub should be given daily. In some cases a cold spinal douche for stimulation may be of benefit. If the patient is bedridden, a cleansing soap sponge should be given daily, followed by a salt rub.

The question of internal treatment is a difficult one to deal with. The real cause of the

disease not being known, we can only resort to general tonic treatment with special medication for the diarrhea, irritable stomach, and stomatitis, should they arise. As a general tonic I have used arsenic, usually Fowler's solution, in tonic doses from three to five drops after meals, and in conjunction with this, I would suggest the use of iron, quinine and strychnine when the stomach is not too irritable to receive such doses. If there is vomiting, a tonic should be kept up such as a solution of the peptonate of iron and manganese, with arsenic. In all cases, sodium chloride should be given internally, 15 or 20 grains three or four times a day in water. Donovan's solution is an excellent tonic that may be used in some cases. I believe good has followed the uses of tablets of lactic acid bacilli.

In all cases full nourishment of the patient should be urged. The food should be abundant, nutritious and well prepared.

Stomatitis, gastritis and diarrhea usually come together. Sometimes there is a great deal of vomiting with a severe diarrhea, apparently uncontrollable, and a great deal of salivation. The skill of the physician is put to a test in this type of case. The mouth should be washed two or three times a day with a solution of peroxide of hydrogen, diluted with an equal part of water, and in addition to this an antiseptic solution like liquor antisepticus or listerine should be used after the peroxide of hydrogen. I have seen good results from the local application of the solution of silver nitrate to the ulcerations on the mucous membrane and tongue. A suitable solution to use is 15 grains of silver nitrate to glycerine and water equal parts to make an ounce.

The next point to look to is the irritable stomach, and I have used a mixture such as the following with some degree of success: Phenol, m xxx.; ingluvin, Zii.; mucilage of acacia, Zvi.; bismuth subutrat, Ziv.; elixir lactopeptone, Ziv. M. Sig.: Give two teaspoonfuls 15 minutes before giving food.

For the diarrhea pulverized opium with the acetate of lead may be used. Salol and bismuth in full doses often repeated may be of some service, but of all the difficulties met with in the treatment of pellagra, the diarrhea is the hardest to control. It seems that all efforts are futile, though I have seen some patients with this uncontrollable diarrhea, bed-ridden and apparently in the last stages of the disease, recover sufficiently to get up and look apparently well. During the severe stages of this condition a liquid diet should be given. And even rectal feeding may be resorted to. I have had patients, though suffering from the stomatitis, irritable stomach and severe diarrhea, to take and retain well prepared milk toast served hot.

Sometimes a severe conjunctivitis develops. The ordinary methods of treatment for this condition should be followed. If corneal ulcers should develop, powdered calomel should be dusted into the ulcers and the eyes kept clean with boracic acid lotion.

In case melancholia should develop later on in the disease, the bromides should be used. For insomnia veronal or trinol, and better, a combination of the two should be given.

Fresh air should be allowed in abundance to every patient. Even if bed-ridden, the room should be fresh. If the patient is up and moving around, he should be required to stay in the open air the most of the time.

In the treatment of the disease transfusion of blood has been resorted to, and with some success.

Atoxyl has been used but with no decided benefit over the other arsenical preparations.

The feces of all cases should be subjected to a microscopic examination.

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TREATMENT OF SURGICAL ANEMIA.*

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By the term "surgical anemia," we mean a condition of the body as a whole, or of any of its organs and tissues, in which there is a more or less acute loss or diminution of the complex food supply, producing an impairment or loss of function, or death of the parts involved.

It will be seen at a glance that this subject embraces a vast area in the field of surgery, confronting the operator, in one form or another, in almost every case with which he has to deal. It will be impossible in the scope of this paper to do more than discuss very briefly many of its features, while a few of the more important phases will be gone into somewhat in detail. Before taking up the treatment of the subject in hand, it may not be out of place to make a few remarks bearing on the pathology and physiology of certain types of surgical anemia.

Since we know that an almost constant food supply is essential to the normal functional activity and life and growth of animal tissues, and since we may have an acute anemia of one or all of the body's organs, or of any portion of the same, the question of the varied results and the treatment of surgical anemia assumes gigantic proportions. An important fact to be remembered is, that individuals as well as the different tissues respond unequally to a diminution or complete losos of food. Hence the fact that death of various tissues does not occur simultaneously even though a uniform degree of anemia be present. Thus, we see, the results of surgical anemia vary between a slight derangement of function of a tissue or organ and a definite death of the whole body, depending on the Agents designed to promote the coagulability of the blood may be of service.

In the more severe cases attended with a greater or less degree of shock, the problem assumes a more serious aspect. A little later degree, extent and duration of the anemia as well as on the resistance of the tissues involved.

It is common observation that *rigor mortis* does not occur for hours after death. This is the period of "relative death" of the muscles, during which time, reanimation of the muscles is possible by supplying the proper nourishment. This "period" is longer with bones and shorter with nerves than in the case of muscles. The skin is very resistant, likewise the blood vessels. The heart has beat rhythmically after preservation for two days. Parts of the central nervous system vary greatly, but have comparatively little resistance. It has been observed that tissues and organs of low specialization endure total anemia better than tissues and organs of higher specialization.

Surgical anemia may be due to a direct diminution of the blood volume by hemorrhage; to a local interruption of the blood by mechanical means, such as traumatism, tourniquets, strangulation, bandages, apparatus, tumors, thrombosis, embolism, etc., and last, but by no means least, to a segregation of the blood in the visceral sinues by a disturbance of the vascular mechanism, as in shock or collapse.

It is needless to state that the best treatment for any of these causes—for we must give attention to the cause, first, and then to the effect—is prophylaxis. If we are dealing with a simple hemorrhage of moderate degree, the ordinary hemostatic agents may suffice, such as ligation, suture, torsion, acupressure, elevation, compression, styptics, the actual cautery and forced flexion of limbs. we shall differentiate between the treatment of hemorrhage and shock, pure and simple, but where both conditions co-exist the surgeon may safely assume that the usual treatment for acute anemia will not be contrain-

*Read before the Nashville Academy of Medicine, Oct., 1909.

dicated by any serious internal congestion. Direct transfusion of blood by Crile's method appears to be the most rational treatment here, as well as the most effective in extreme cases. Where this is impracticable, normal saline and adrenalin intravenously or by hypodermoclysis is the best substitute. W. H. Allport, of Chicago, says: "Without replenishing the blood volume temporary diffusible stimulants and vaso-constrictors, as strythnia, digitalin, alcohol, etc., are worse than useless, only belaboring a circulation which has already become emptied and fagged out by extravascular hemorrhage."

In local anemia due to mechanical agents the cause and treatment are usually apparent. Where an essential blood supply is completely occluded, the work of Carrel, Payr and others offers a means of possible substitution in the form of blood-vessel anastomosis and heteroplastic transplantation of blood vessels. Likewise, the transplantation of certain organs and viscera is being accomplished with more or less success.

The swift and dire results of anemia of the central nervous system make this of special importance to the surgeon. As Stewart remarks, "While it is of great scientific interest to know that a certain tissue may be roused to activity several days after death, yet, manifestly, it can be of no practical importance in the resuscitation of an entire body if it transcends the limit of the weakest link in the systemic chain." Since we find that certain parts of the central nervous system is our weakest link, their important function makes it very necessary to render prompt treatment in cases of anemia of these tissues. Such a local anemia may be due to causes like gravity, embolism, ligature, compression by depressed bone or intracranial hemorrhage, compression of the carotids, tumors, cerebral edema, etc.

Treatment will vary with the extent and degree of the anemia as well as with the particular etiological factor. After certain operations the sitting posture may be desirable, but gravity tends to diminish the cerebral circulation. Crile here uses his pneumatic suit, which may be substituted by tight bandages over cotton applied to the extremities and abdomen. In anemia due to intracranial pressure, Crile points to nature's response in the form of an elevated general blood pressure and displacement of the cerebro-spinal fluid, arguing against the use of any mode of depressing the circulation. Even support should be given by therapeutic as well as by the mechanical means just mentioned. Likewise, surgical approach must be physiological; posture should be horizontal or head lowered. Decompression should be prompt with as little hemorrhage and manipulation as possible.

The question of shock has been the subject of wide discussion and much theorizing, as well as of extensive laboratory investigation, especially in recent years. The searcher after truth still finds that the causes and operations of many forms of shock have never been intelligently explained, and a casual glance at the literature reveals diverse theories as to many phases of this grave condition. Gross graphically described shock as "a rude unhinging of the machinery of life." Crile pictures it as "a momentary pause in the act of death soon followed by the grave reality." Were this prognosis to be taken literally, there would be little use to discuss the quetsion further. But if we follow the masterly work of this latter investigator we see that largely due to him even the most profound cases offer some hope of recovery.

W. W. Keen, with S. Weir Mitchell and G. R. Morehouse, in 1864 was the first to put forth the theory that shock was an exhaustion of vaso-motor activity, which is the same theory as that of Crile and others to-day. Leyden thought that it was due to reflex inhibition of the centers of the cord, and Meltzer, in a recent paper, practically agrees with him. W. H. Howell thinks there are two forms of shock that may operate independently: (1) Cardiac exhaustion or inhibition, as in severe fright; (2) vaso-motor paralysis, as in severe injuries where the cord and medullary centers

sustain the heaviest weight of the blow on the nervous system.

Malcolm, Porter, Seelig, Lyon and others, on the other hand, have shown that the arterioles are not dilated but markedly contracted in shock, and hence, that the vaso-motors cannot be paralyzed. In support of this, Malcolm makes some interesting clinical observations. He says that low blood pressure is thoroughly consistent with contracted arterioles; that if they were relaxed there should be an overfilling of these vessels, the falsity of which is confirmed by the cold, pale body surface, anemic mucous membranes, weak or impalpable pulse, and almost bloodless incisions. Then, too, the application of warmth to the body surface tends to lessen the symptoms of shock despite the fact that warmth usually relaxes vessels. Seelig and Lyon, of St. Louis, have made some interesting observations on the blood vessels of the retinae of dogs during shock, noting that in every case they were contracted from one-half to one-third their normal size.

A German author declares that shock is sepsis! Allport remarks that "if such be true, the virulently active microbe of Pirogoff's gangrene has something to learn in point of speed from this latest star in the bacterial sky."

It is now pretty well agreed that shock must be differentiated from hemorrhage before a rational treatment can be instituted. This is often a puzzling question. Moreover, both conditions may be present and in unknown proportions. Two physiological phenomena here come to our assistance which Allport describes as follows: "(1) The pulmonary anemia of hemorrhage causes increased desire for air for the remaining blood, air hunger; (2) cerebral anemia results in waves of unconsciousness, especially when slight exertion draws off the remaining blood in the brain, recurrent syncope. In simple shock the sinuses of the brain and lungs are not anemic and we find an absence of these symptoms unless a fatal termination is close at hand."

Under the consideration of treatment, preventive measures should not be forgotten, as in operations which will likely produce shock because of long duration, traumatism, removal of tumors, severing of nerve trunks, hemorrhage, etc. First of all, the anesthetic should be properly selected and administered. The hypodermic injection of morphine and atropine twenty minutes before the operation will often prove invaluable. I believe that this should be a routine in all operations under a general anesthetic, especially ether, unless there be some specific contraindication to its use. Dry heat is preventive as well as curative. Kinnaman emphasizes the necessity of preserving the body heat in shock. If hemorrhage is expected Crile begins direct transfusion synchronously with the operation; saline intravenously or by hypodermoclysis, of course, may be substituted. Nerve blocking by cocaine should be done where large trunks are to be divided, especially if the danger of shock is feared.

The treatment of anemia from hemorrhage, and from shock complicated by hemorrhage, has been referred to. In shock pure and simple the circulation needs no reinforcement, but simply calls for readjustment. As Maunsell-Moullin puts it, "tranfusion is of no value in shock unaccompanied by hemorrhage, and infundations only increase the amount of fluids already stagnating in the viscera." Then what shall be our plan of treatment in these cases? After a rather careful study of the subject, we think the following will meet most of the indications: (1) Dry heat. (2) Hot drinks, if the patient can swallow, and hot enemata repeated. (3) Trendelenburg posture, and if hemorrhage be present bandage the extremities or use Crile's rubber suit and give direct transfusion or normal saline. (4) Adrenalin or digitalin, best administered by Crile's method, which will be described later. Adrenalin is certainly the most valuable vasoconstricter in these cases. Brooks and Kaplan, of New York, have found by experimentation that increase of blood pressure is rarely

produced when the drug is given subcutaneously. To obtain this result it must either be thrown directly into the blood stream or given as an intramuscular injection. (5) Artificial respiration and extra-thoracic cardiac massage. Inhalations of oxygen may also be of benefit in extreme cases. There are many who now believe that strychnine is not only useless, but actually injurious in pure shock.

A question that often confronts the surgeon in this connection is, should operation be performed during shock? It is pretty well agreed that it should not be done unless death without instant operation is inevitable. Such indications are hemorrhage, strangulated hernia, intestinal obstruction, obstruction of the air passages, intraperitoneal extravasations from ruptured viscera, etc. If hemorrhage can be temporarily controlled by a clamp or pressure, so much the better, then react patient and complete operation later. Severance of limbs already practically amputated should be completed. For such procedures pain should be controlled by morphine and a few whiffs of ether, never chloroform. In severe shock the most radical should be willing to follow Guthrie's rule to "wait four to six hours till pulse comes up and patient commences again to feel pain; otherwise, don't operate."

Resuscitation of a patient in a state of suspended animation has been accomplished in two ways: (1) By extra and intrathoracic cardiac massage; (2) by perfusion with some artificial or natural circulating fluid. To be efficient this fluid must directly or indirectly produce and maintain within the coronary arteries sufficient pressure to cause cardiac contractions. Crile combines these two factors in his technic of resuscitation which he describes as follows: "The patient in the prone posture is subjected at once to rapid rhythmic pressure upon the chest, with one hand on each side of the sternum. This pressure produces artificial respiration and a moderate artificial circulation. A cannula is inserted toward the heart into an artery. Normal saline, Ringer's, or Locke's solution, or, in their absence, sterile water, or, in extremity, even tap water, is infused by means of a funnel and rubber tubing. But as soon as the flow has begun the rubber tubing near the cannula is pierced with the needle of a hypodermic syringe loaded with 1 to 1000 adrenalin chlorid and 15 to 30 minims is at once injected. Repeat the injection in a minute if needed. Synchronously with the injection of the adrenalin the rhythmic pressure upon the thorax is brought to a maximum. The resulting artificial circulation distributes the adrenalin that spreads its stimulating contact with the arteries, bring a wave of powerful contractions and producing a rising arterial, hence coronary pressure. When the coronary pressure rises to, say, 40 mm. or more, the heart is likely to spring into action. The first result of such action is to spread still further the blood pressure-raising adrenalin, causing a further rise in blood pressure. . . . Just as soon as the heart beat is established the cannula should be withdrawn. . . . Unless there has been hemorrhage, the only object in the use of saline infusion is to serve as a means of introducing the adrenalin into the arterial circulation toward the heart." This method, it appears, should have a wide application, and especially would we insist that anesthetists be at all times prepared to employ it. It does not within itself complicate the patient's chance for ultimate recovery, and is more effective than any other means known, even direct cardiac massage.

It is evident that, to be effective, any method of resuscitation must be timely. The simplicity of Dr. Crile's technic, based as it is on rational principles and marked experimental success, should appeal to every one, both surgeon and internist, who may be called upon to meet such urgent conditions of surgical anemia.

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THE PATHOLOGY OE UNCINARIASIS.*

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In undertaking a study of the pathology of uncinariasis is becomes evident that there are certain rather decided differences between the findings in those cases of death from the ankylostoma duodenale and those from uncinaria americana, and for the most part the lesions in ankylostomiasis show the greater degree of severity.

It seems that in the comparatively few years that the disease has been recognized and studied in America the number of systematically conducted autopsies has been rather small, at least I have been so impressed in the examination of the literature accessible to me.

In addition to the post mortem pathology we should with reason, I think, also consider the blood findings which must be ascertained during life; and the remarkable work of Loos, Bentley, and Claude Smith make it imperative to describe the cutaneous lesions of ground itch as an essential part of hookworm pathology

BLOOD CHANGES.

As in all the other phases of the disease we must distinguish carefully between the findings in the severe cases, which often result fatally, on the one hand, and the cases which are acompanied by only very mild symptoms and are difficult to recognize or have no symutoms at all, except the finding of eggs and worms in the feces and usually increased eosinophiles in the blood on the other hand.

As conclusively shown by Chamberlain (1) in his investigation of the Southern bred recruits of the United States army, a very large proportion of all the rural population in the Southern States must have hookworm infection of greater or less severity at some period of their lives. Of 147 men, including both new recruits and those who had been in the army for several years, 64 showed ova of uncinaria in the feces. All of these were light infections, not one showing symptoms which could lead to the diagnosis except the presence of the parasite and the presence of eosinophilia in a large percentage of the cases.

Hemoglobin.—In Chamberlain's 64 cases, all light and without symptoms, the hemoglobin was from 80 to 100 per cent, with an average of 91.5 per cent.

Bass (2) reports the blood findings in 62 cases of mild infection. The hemoglobin percentage averaged 90. (The red cell count averaged 5,125,000 in these cases.)

In five cases of light infection which I have examined in children suffering with pellagra, the hemoglobin averaged 93 per cent.

In severe cases.—In Ashford's (3) 19 cases (Porto Rico) the hemoglobin varied from 10 per cent to 55 per cent.

Leonard (4), (Island of Grenada), 20 cases. Both ankylostoma duodenale and uncinaria americana were present, the majority of cases showing the ankylostoma. Hemoglobin varied from 8 to 40 per cent.

Colbert (5) (Porto Rico), 5,000 cases. Average hemoglobin was 44.1 per cent.

Ashford and King (6), (Porto iRco), 579 cases at random averaged 43.09 per cent, running as low as 8 per cent.

Perry, Greensboro, Ala., 100 cases. Hemoglobin varied from 10-90 per cent, averaging 42 per cent.

Capps (7) (one fatal case from Panama).

*Read before the First Southern Health Conference, Atnalta, Jan. 18, 19, 1910.

Hmoglobin decreased from 18 per cent to 11 per cent at the time of death.

Harris (8), 1 case. Hemoglobin 20 per cent.

Red cell count.—Is not given in any series of mild cases except by that of Bass, in 62 cases. Average was 5,125,000.

In the severe cases there is a decided reduction of red cells.

Ashford (3), 19 cases varied between 697,766 and 3,524,000.

Capps (7), 1 case, progressed from 2,500,000 down to 748,000.

Harris (8), 1 case, 1,760,000.

Hemoglobin index. In mild cases this is unimportant. In severe cases Ashford and King give an average index of .5. Ashford in 3 out of 19 cases gives the hemoglobin index as high as 1. or above.

Leukocyte count—mild cases. Chamberlain in 12 cases, in which the count was made, gives the white cells from 12,700 to 7,600—average 9,600.

Severe cases.—Ashford, 19 cases, 1,500 to 18,000; average, 7,800.

Leonard, 20 cases, no leukocytosis present.

Ashford and King, average on admission, 8,009.

Harris, 1 case, 4,020.

It is important to notice that in some of the most severe cases a decided leukopoenia rather than leukocytosis is present.

Eosinphilia.—In the differential count of white cells, apparently the only important abnormality occurs in the number of eosinophiles. Eosinphilia is present in a large proportion of the cases.

Mild cases.—Chamberlain, 64 cases, 1 per cent to 20 per cent; average, 8.5 per cent. In 83 non-infected men the average of eosinphiles was 2.2 per cent. Only 22 per cent of the infected cases had less than 5 per cent, 11 per cent of the non-infected persons had over 5 per cent.

Bass, 152 cases. In 74 per cent of cases there were less than 4 per cent eosinophiles. In only 6 per cent were there more than 6 per cent eosinophiles.

The writer's 5 cases (in pellagrins) gave from 9 to 14 per cent, average, 11.5 per cent. After treatment with thymol, the counts varied from 14 to 34 per cent, with an average of 19 per cent.

Severe cases—Ashford, 19 cases. Varied from 1 1-4 per cent to 40 per cent. Average, 9.8 per cent.

Leonard (4), 20 cases. Average, 18 per cent. (The majority of Leonard's cases were said to be the ankylostoma instead of uncinaria americana.)

Capps, 1 case, eosinophiles progressed from 13 per cent to 7.6 per cent as patients grew worse.

Harris, 1 case, 2 per cent.

Practically all observers are agreed that the degree of eosinophilia is *not* an index of the severity or amount of infection. A careful analysis of the figures in the 64 mild cases reported by Chamberlain admirably demonstrates this point. The aevrage number of eosinophiles in these cases was 8.5 per cent. Classifying the cases upon the basis of the number of ova in the feces, we get the following: 23 had "many" and "very man" eggs with an average eosinophilia of 8.1 per cent; 21 had "few" and "very few", with an average eosinophilia of 9 per cent. Ranging the same cases according to the number of worms recovered after treatment, we get the following: 16 cases of the 64 had over 20 worms with average eosinophilia of 7 per cent, while the average of the entire number was 8.5 per cent.

Again, considering the severe cases, Ashford gives the average of 9.8 eosinophiles and in 19 cases, 6 had 4 per cent or less. Ashford and King (6) conclude that eosinophilia is very liable to be absent in the more serious cases. They give their conclusions in the following words:

"Eosinophilia is the chief feature of importance. It is strange that Boycott and Haldane lay so much stress on the importance of eosin-

ophilia from a diagnostic point of view, for in the more serious cases it is liable to be absent. In 1904 we called especial attention to our belief that eosinophilia was of great prognostic importance, and have noticed that some German and Spanish writers have expressed the same view. Very chronic cases, of severe type, poor resisting power, and lack of blood regeneration, rarely show eosinophilia, or, if at all, only to a slight degree. A rise in eosinophilia is of great prognostic significance, and their fall, with lack of improvement in symptoms, is not a good omen. In general, good resistance to the hypothetical toxin of uncinaria is expressed by eosinophilia."

Alvarez (9) in Mexico, where all the cases are said to be infections with the European variety, calls attention to the fact that there is usually a decided increase in eosinophilia shortly after successful treatment with anthelmintics. The leukocyte counts in my own cases shows a decided increase in eosinophiles a few days after the administration of thymol.

Several writers emphasize the point of great resemblance between the blood findings in the severe types of uncinariasis and true primary pernicious anaemia. In the case of Capps, which resulted fatally, as the severity of the symptoms increased, the blood showed at first typical secondary anaemia which gradually changed to a picture closely resembling that of pernicious anaemia. However, Ashford and King give the average hemoglobin index in the severe cases as only .5; but 3 out of 19 of Ashford's blood counts gave an index of 1. or above.

Of other changes in the blood characteristic of severe anaemia we may mention the presence of erythroblasts which, however, are usually rather scanty, and this is especially true of the megaloblasts. In this respect the blood differs from the usual forms of primary anaemia.

Poikilocytosis and polychromatophilia are present typically in the severe cases.

One of the most remarkable features of the hookworm disease is the complete lack of agreement between the severity of symptoms and lesions including the blood changes, and the number of worms found in the intestine. This is shown most graphically by Sandwith's (8) post mortem findings (all in cases of ankylostomaisis) where in 26 fatal cases the maximum number of worms found in autopsy was 863. In 6 out of 18 of these fatal cases (all of which had received no treatment to dislodge the worm) there were less than ten worms in each case, and in two cases there was only one worm in each. These facts lead to the almost inevitable conclusion that the cause of the anaemia and its resultant symptoms is not the direct loss of blood, but is rather due to a toxaemia caused by some poison generated by the parasite to which the organism in the cases where the patients die with only a few worms present, must become unusually susceptible.

The observers who have seen large numbers of the severe cases and of those harboring great numbers of the parasite conclude that there is little relation between the number of worms and the severity of symptoms, and are agreed that the hookworm does not cause its symptoms by its blood-sucking propensities, but by some as yet unknown toxin.

POST MORTEM FINDINGS.

I have studied reports of 17 complete autopsies upon American cases. Ashford and King, 12, in Porto iRco. Leonard, 4. Island of Grenada. Capps, 1, Chicago from Panama. These can be compared with the findings of Sandwich (8) in 26 autopsies in cases of ankylostomasis.

General.—There is practically always edema present with marked dropsy of the lower extremities, some abdominal ascites, serous effusions in other serous cavities, and considerable general anasarca. The bodies usually appear fairly well nourished, and in the adult cases quite well developed muscularly, but the intense pallor of the skin and other tissues is invariably marked. The subcutaneous and other fat of the body is well

preserved, of normal amount and of a light yellow color. This comparative absence of emaciation and preservation of normal amount of fat is in decided contrast to the findings of Sandwith (8) in the ankylostoma cases, in which the muscles were wasted and there was usually a decided absence of fat. In his report the average weight of 100 severe cases was 117.5 pounds, where normally the weight should have been 135 pounds. In this connection the observations of Chambrelain (1) upon soldiers with light infections is of interest. In comparing the weights of northern and southern soldiers, there is a difference in favor of the northern recruits, also there is a difference in favor of the non-infected southern recruits over the infected southern recruits.

Bass (13), in a later report of examination of students at Tulane University, calls attention to the important fact that there is a definite inferiority in both weight and stature in students who have mild infection with uncinaria as compared with non-infected students. It is to be remembered that in these mild cases there are no clinical symptoms which would lead to the detection of the disease except by the examination of the feces. The muscular tissue, according to Ashford and King is brownish gray in color, friable and often atrophied and microscopically the muscle fibers are fragmented and protoplasm reduced in amount.

Gastro-Intestinal Tract.—The habitation of the worms is usually confined to the upper part of the jejunum, and a certain number are found in the duodenum. In a few cases they have been found in the ileum, but never in the colon, and Ashford and King describe their occurrence in the stomach in several cases, both attached to the mucous membrane and unattached. In practically all cases there is a mucous gastritis, sometimes extreme. Ashford and King report two cases, and Leonard two cases of gastric dilitation. The duodenum and particularly the jejenum are the seat of a severe catarrhal process which also affects to a degree the other portions of the intestines. There is a large amount of mucous in the intestinal canal in which the worms are imbedded, and which is often blood stained in places. The lesions of the intestine are confined to the mucosa, and there is often degeneration and atrophy of the intestinal and gastric mucous membrane.

At the point of attachment of the worms there is a tiny erosion, superficial, not deep, and about one-half millimeter in diameter. This erosion is usually not surrounded by any discoloration, and is difficult to locate with the naked eye. Leonard says that the mucous membrane showed minute hemorrhagic spots, but a majority of his cases were of the ankylostoma type. These minute superficial erosions are in marked contrast to the lesions described by Sandwith in the cases of ankylostomiasis, where there are numerous petechial hemorrhages marking the point of attachment of the worm, and some of the worms are found embedded for half the length of their bodies in the thickened mucosa, and those so attached are surrounded by much bloody mucous.

Ashford and King express the opinion that the food of the uncinaria is the epithelial cells of the mucosa, and that it is not a blood-sucker. In only 5 cases in 10,000 was there sufficient blood in the feces to be discovered by the microscope. In examining 80,000 worms none containing blood were seen. Leonard only occasionally has seen the worms blood red in color. In Colbert's 21,000 cases (Porto Rico), 12 showed blood microscopically visible in the feces, and in 23 was it visible by the microscope. However, by the chemical tests for occult blood, probably a much larger per cent will be positive. McNabb, at Knoxville, says that in every case he finds blood in the stools by the Guaiac or the Benzidine test. In my 8 cases, all light infections, only two were positive to the Benzidine test. Stiles says that 80 per cent of the severe and medium sever cases will react to his blotting paper test for blood.

The largest number of worms removed by anthelmentic in any one case as reported (Colbert), is 4,872. The proportion of males to females of the parasites as found at autopsy by Capps was one male to four females. Sandwith in 50 cases gives the proportion in the ankylostoma infection as 56 per cent males and 44 per cent females. Other observations recently reported are practically in accord with the finding of Capps that the proportion is about 1 male to 4 females in the American cases.

Liver.—The most pronounced change in the liver is *fatty degeneration.* In Capp's case the liver weighed 1600 grams, was mottled yellow in color. The cut surface was mottled yellow and red, and cut with decreased resistance.

Ashford and King give the color as light brownish-yellow or very light yellow; it is soft, friable and greasy to the feel. Microscopically, fatty degeneration was always present, and in the milder cases more pronounced in the outer third of the lobule.

Spleen.—Ashford and King state that the changes in the spleen are definite and characteristic. It is decreased in size, soft, and has a wrinkled capsule. Microscopically, the 8 cases examined invariably showed a decided paucity of lymphoid elements, and even a decrease in the size of the lymphoid cells. The Malpighian corpuscles were greatly reduced in size and in cellular content. The increase of connective tissue was only relative and apparent.

Capps reported a large spleen with interstitial hyperplasia. This was possibly malarial in origin.

Leonard says the spleen was normal in two of his four cases, and enlarged in two, the enlargement probably being due to malaria.

Kidneys.—Ashford and King report that practically all fatal cases show a chronic parenchymatous or diffuse non-indurative nephritis. They are invariably very pale, and usually slightly enlarged. In the older patients there was a slight increase in connective tissue. Microscopically the changes were most marked in the convoluted tubules, where there was fatty degeneration and desquamation of epithelium. There were exudates of serum and blood into the interstitial tissue and Bowman's capsules, and bloody and epithelial casts in the tubules.

Their findings in the urine of the severe cases correspond well with these post mortem lesions. Twenty in 24 cases had small trace of albumen before any anthelmentic treatment. Eighteen in the 24 had casts, hyaline and granular, no bloody casts and few epithelial.

Lungs.—The only constant changes seen in the lungs are the extreme pallor as in the other organs, and in almost all cases a pulmonary edema, as shown by the dripping of fluid from the cut surface. Many cases show signs of passive congestion, probably due to incompetency of the mitral valve. Every case is reported to have had a greater or less degree of pleuritic effusion, clear and yellow in color.

Heart.—Sandwith says there was a cardiac hypertrophy in 10 of his 26 cases. The American observers also report cardiac hypertrophy in several cases and dilitation dependent upon fatty degeneration in many of the cases. The muscle was frequently flabby, and a functional incompetency of the valves was present.

Ashford and King say there is frequently an increase in the pericardial fat. In all cases a considerable amount of serous effusion is present in the pericardial cavity. Microscopically they report in two or three cases distinct brown atrophy, and in two cases extensive fatty degeneration.

Brain.—About the only constant lesions described in the brain are intense anaemia and an effusion into the ventricles of a clear, pale yellow fluid.

Bone Marrow.—The marrow of the shafts of the long bones usually has undergone changes somewhat similar to those in pernicious anaemia, although Capps in the description of his case says that the marrow of the femur was extremely yellow and fatty. "At

two points it had a reddish color, but was even here practically all fat."

Ashford and King examined the shaft of the femur in two cases. The marrow was grayish-red and very soft. Microscopically it was similar in appearance to pernicious anaemia (which probably means it contained an abundance of erythroblasts) and also contained numerous groups of eosinophilic cells mostly myelocytes, as well as large numbers of myeloplaxes.

Hemolymph Glands.—Ashford and King lay great stress in changes in hemolymph glands. In two cases in which search was made, numerous hemolymph glands of considerably larger size than the normal type were found in the region of the abdominal aorta. Most of these were of the splenolymph variety.

GROUND ITCH.

The etiological relationship of the so-called ground itch to uncinariasis can be considered to be proved beyond any reasonable doubt. In 1901 Loos (10) first showed experimentally that the larvae of ankylostoma enter the skin through the hair follicles and penetrate the deeper tissues. This entrance has been repeatedly demonstrated since.

All of the descriptions of the symptoms, lesions and sequence of events in ground itch either accidental or experimental in origin are in perfect accord, and have been most accurately described by Ashford and King (6) and by Claude Smith (11).

According to Ashford and King (6) the exposure of the skin to the larvae causes the following symptoms:

1. Itching within a very short time.

2. Followed by redness and swelling of part.

3. In two days papules appear.

4. These rapidly change to vesicles, discrete or often confluent with later usually rupture.

5. Frequently followed by pustules, but in favorable cases pustules do not form.

6. In case pustules do not form, the vesicles soon begin to dry up and crusts are formed and in the milder cases not forming pustules, the lesion completely subsides in a week or two.

7. In the more severe cases, in which the symptoms are probably due to secondary pyogenic infection, extensive and deep ulcers form, which sometimes respond well to treatment but often are very resistant.

Claude Smith (11) has shown that a toxin may be extracted from the larvae by alcohol which will produce the itching and other changes of ground itch, but in a milder form.

Colbert (5) reports that in 5,000 cases of uncinaria 4,956 gave a typical history of one or more preceding attacks of ground itch.

Ashford and King (6) say that 96 per cent of 12,000 cases gave such history.

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A CASE ILLUSTRATING THE INFLUENCE OF IMPROPER TRAINING AND FALSE TEACHING IN THE EVOLUTION OF A NEUROSIS.

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While much is being said about psychic treatment, Emanuelism, psychanalysis and the like, some reflections on the case that follows may prove interesting. The history brings out many of the peculiarities of the nervously predisposed and explains some of the incompatibilities arising in their struggle with environment, how they try in their crippled way to adjust themselves to the contingencies of life, and how they are often handicapped by the misguided efforts of parents and others who have the choosing of their education and occupation.

A young white man (aet. 29), born in a neighboring State, now residing in this city, was brought to me by his relatives for consultation regarding peculiar nervous attacks he had been having a short while before. The following history was elicited: Father probably neurotic, died at 50 of pneumonia; mother living and well (parents were of Scotch and Irish extraction); one brother was neurotic and is supposed to have committed suicide; another living brother is exceedingly nervous; two brothers and two sisters now living and well. Nothing definite is known of more remote relatives.

The patient was born naturally, being the third child. Infancy and childhood were free from illness or injury of consequence, though the mother considered him a delicate child and for this reason he was the object of her special care and solicitude. After the father's death the mother taught school to assist in supporting the family. She entered this son at her school rather early and inspired him with the ambition to excel in his classes. She confined him rather closely at home and he was deprived of the wholesome influence of play and contact with children of similar age, and was thus not allowed to acquire taste for the rougher sports of boys. The mother noted with pleasure that the boy showed no inclination for such things, and was still more proud that he showed a fondness for books and study. Patient began about this time to be morbidly solitary, but this was thought to be incidental to his studious habits. He also had night terrors occasionally and got wrought up over fear of dying from choking, as he on several occasions had nervous spasms of the muscles of the throat. As he approached puberty in the early teens he began to indulge in day dreams and to entertain sexual fancies. He likewise became passionately fond of long solitary reveries in which he would make sweethearts of the larger girls he knew. However, in the presence of these same girls he was as shy as possible and would retreat if advances were made toward him. During his early teens he took to masturbation and practiced this for perhaps two years. His rather highly educated and sensitive conscience gave him a great deal of deep remorse over this practice, and he contemplated getting himself castrated in order to lead a purer life. From his early childhood up to this age he had been kept carefully under religious influences, but he now became fervently absorbed in religious thoughts, and thinks he was really converted at that time. Religious influence has obtained with him after a manner since. Statements of

the mother are to the effect that about this same age he became egotistical and assertive, talked too much and was self-opinionated. If corrected he was deeply wounded and brooded over his damaged feelings, scaring the family by threatening to commit suicide. He was thought to have shown unusual aptitude for technical studies, and the mother, being a great believer in education, and having determined to educate her sons and put them into professions, had no trouble in firing the ambition of our subject to "do something in the world." He is said to have made high marks in his classes and to have incited the admiration of his teachers from the age of 15 to 17. When 18 years of age he took up preparatory work for college.

About this time he became less constant in his application to study, vacillated from one course to another, but finally made up his mind to be an electrical engineer—one of the more gentlemanly sort. Took a partial course in this, then gave up interest. Subsequently went to a technological institute in an Eastern city, but here again he changed from one branch of the work to another, and eventually made a failure of it all. After returning home he seriously contemplated taking up law, medicine, theology, but seemed unable to apply himself with constancy to anything. When 23 years of age he was compelled through lack of further means of pursuing this desultory work at college, to attempt to earn a livelihood. He soon found that he had not acquired enough knowledge of any particular subject to obtain employment in special lines. Anything suggesting labor he considered degrading. However, he eventually took a position as stationary engineer at a factory, but did not keep his place long, as he had no taste for the work, and owing to the fact that the men with whom he was thrown in contact were, according to his notions, his inferiors, he offended them with his manner and they returned the compliment. He seems to have entertained an apprehension that these men would injure or kill him for a long time after he left the community. After holding numerous positions of the kind in various cities, he again returned home. About three years ago, our patient contracted a love affair with a lady older by five years than himself, who seemed not to take him seriously and rejected his proposals of marriage with some ridicule. This wrought powerfully upon him, and he brooded over it for a number of months. Next he fell sick with typhoid, suffering from orchitis and abscesses as complications. During the fever he was delirious almost constantly. During and after convalescence, which was tedious and long, he remained amnesic and negative. After insistent, careful questioning he admits that he indulged in venery on several occasions, but is morbidly sensitive about this, as everything else pertaining to sex matters. Could never urinate in the presence of others. Denies venereal disease. However, he represents that while attending technological school he, on entering a room in the dark, struck his right groin against the corner of a table which caused a swelling resulting in abscess necessitating incision. In May, 1909, he became imbued with the idea that he was suffering from pulmonary consumption. This suspicion seems to have been excited in his mind by a cold or light attack of grippe which he sustained at the time. The upshot of this scare was a trip to Colorado for a climatic cure. While there he made the acquaintance of Mrs. M., a Christian Science reader. The teachings of Christian Science appealed powerfully to him, as they seemed to soften his lot by nullifying the evils which he fancied were always threatening him. Patient says he had for a long time had a feeling of inadequacy and insecurity and seemed unable to ward off the encroachments of his environment. Of course the self-diagnosed case of phthisis promptly got well. Christian Science influence has steadily grown with him, until he now spends a large part of his time reading and meditating on its speculations. In fact he has become quite incapacitated for

anything else. On several occasions during the past two months he has been observed to lapse into apathetic states in which he refuses to speak to anyone or move for several hours. Such was the history brought to me by the patient and his relatives.

Careful neurological examination showed no sign of organic disease. Aside from obstinate constipation the body functions were all good. Weight was slightly reduced, owing to his neglect of eating recently. He was obviously at least partially amnesic for all that had transpired in the so-called apathetic spells. He maintained that it was his success with Christian Science meditation, in which he had managed to accomplish oblivion to extraneous things, which had alarmed his relatives. Being sent for several days afterward, I had an opportunity to observe one of these attacks. The condition was readily recognized as a typhoid state or one of the changed states of consciousness usually seen in hysteria of the major type. The patient was further observed to be morbidly amenable to suggestion and over-impressionable in temperament.

So then at the time he came under my observation our patient had become a major hysteric. And I cannot escape the conclusion that the apathetic attacks were self-induced from meditation upon certain of the dicta of Christian Science. As to the numerous other nervous defections, these were neurotic incidents, some of which were temperamental, others were called into play by unfavorable environment and more especially the ill-advised efforts on the part of his mother and others to crowd his head with abstract knowledge, while he might better have been allowing some of his natural impulses to express themselves, or finding out his real aptitudes. It was easy to inflame his pride, as all neurotic children are egotistical and sensitive. Hence, they had no trouble in getting him to break himself on abstruse and, to him, useless studies. In divers ways the excessive pride and commensurate conceit were ministered to, to his later detriment. As puberty approached, sex affinities began asserting their influence, and the boy is further sensitized to many and novel things. Like most pubescent boys he took up the habit of self-abuse, and got more than his portion of remorse out of it, owing both to his impressionability and to the puritanical ideals which had been set up for him. He never quite had the courage to claim his place by one of the opposite sex, or to creditably carry out his role in courtship. He is still so sensitive about things sexual that he resents being questioned about them. In this way he defeats any effort to get at the genesis of his hysteroid symptoms. He patronized loose women to some extent, and had an inguinal bubo. Regarding the latter, he has obviously invented a defense story which does not offend his ego, and which he has probably come to believe himself. Now it is also probable that many of his morbid reactions to things in his later life can likewise be traced to efforts at suppression of disagreeable affectivity connected with sex experiences. In this event we have here on a rather large scale a "defense neurosis" according to Freud.

objectionable state of things and make this

What could have been done to obviate this young man a better member of society?

He was born predisposed to nervous ills and with mental qualities of a kind best suiting him for some pursuit in life not necessitating much mental attainment, such as an agricultural calling or some trade. He could have been sent to a school for manual training and fitted for complete success in such a vocation. Unfortunately nervous children are rarely properly understood by their parents, nor can this often be expected. Some day people will see the wisdom of consulting physicians in the choice of school curricula and subsequent occupation of children who manifest nervous anomalies.

The case further shows rather strikingly the influence of Christian Science in putting the finishing touches on a neurosis. Our patient said he embraced Christian Science because by

cultivating the belief that there was no pain or other disagreeable thing *per se* he seemed to acquire immunity from a good deal of his customary distress and apprehension about his health.

In neurological practice I have frequently made the observation that nervous people are vaguely aware of the true nature of their frailties, and how these constitute flaws in their personality and impose disabilities upon them in coping with circumstances in their extraneous world. This sense of inadequacy destroys resolution and acts as a constant menace to the personality because the subject feels constantly open to encroachment where this weakness obtains. Hence, his sensitiveness. Inasmuch as a large part of our mental lives is made up of efforts to avoid, invalidate by reasoning away, or forget impressions that are disagreeable or detrimental to the ego, it is readily seen how influential an appreciation by neurotic people of their deficiencies is in the genesis of their symptoms. Their efforts to mend their defections having proven ineffectual, the next best thing is to seek conscious oblivion to them, or deny their existence.

Such efforts to conserve the inner personality are instinctive and defensive. Neither have we any right to deny them what consolation they may obtain by patronizing a cult which desensitizes them, as it were. If someone comes along with a system which fulfills these purposes, it is a hit with the neurotics, and the latter are very willing to stultify their rational faculties to get the desired relief. Someone has recently stated that this is the age of health worship, and so it is to a certain extent, because people have become more intelligent about matters of physiology and hygiene and are directing their primeval instinct of self-preservation towards such ends. Admitting the quickened condition of the popular conscience on these matters, we will see how timely are the preachments of an individual who manages to construe promises of religion so as to still the misgivings of nervous people. This to the writer's mind explains the popularity of such cults. These same neurotic people happen, practically all of them, to be amenable to suggestion. It is one of the stigmata of the neurosis. If the welcome and agreeable assertions of the cult are repeated often enough (as they are) the attention of our neurotic is soon distracted from logically opposed facts, and peace follows. If this method of dealing with nervous disturbances were always successful no one could criticise it. However, it not infrequently leaves its devotee worse off, a greater sufferer from defense neurosis. This emphasizes the necessity of operating a system like Emanuelism under the advice of physicians who should choose the cases to be subjected to the treatment.

Freud and Breuer in their masterly analysis of hysteria and other neuroses have established the fact that such conditions often result from the subject's efforts to suppress, forget, or otherwise escape from painful impressions arising out of real experiences. Freud has developed an explanation of the mechanism by which the neurosis is evolved through the instinctive and biological reaction of defense against what is incompatible with the ego. Christian Science is an exactly similar defense method with the exception that it adds promises.

In the case I have cited, the subject has developed a full grown hysteria, probably arising out of some anomalous sexual experience early in his history, and incited to full and aggravated expression by the suggestive teachings of Christian Science. I am firmly of the opinion that the changed states of consciousness referred to have been induced directly by his reading of this matter.

INDICANURIA.

Judson Daland, Philadelphia (*Journal A. M. A.*, October 30), recommends the following test for indican: "To 10 c. c. of filtered urine add 1 drop of 1 per cent. solution of potassium chlorate; then add 5 c. c. of chloroform, and lastly 10 c. c. of pure hydrochloric acid of a specific gravity of 1.19. Thorough mixing is

obtained by repeatedly and slowly pouring from one test tube to another. The indigo thus set free is dissolved in the chloroform to which is imparted a blue color. The maximum coloration is secured in ten minutes." The depth of color of the chloroform will serve clinically to indicate the amount of indican present. If the urine contains iodid the chloroform will be colored by adding three drops of a 5 per cent. solution of sodium thiosulphate. Indican may be constantly present, or it may occur at certain hours of the day or on certain days of the week or month. It is desirable, therefore, to have frequent examinations for it whether the symptoms, such as headache, indicate its presence. The first urine on rising and retiring, as well as that taken from a twenty-four hours' specimen, should always be examined. Clinically, indicamuria may be mild or severe, acute, chronic, or recurrent and occur as an independent affection or as a complication of other conditions. Its presence is significant of the absolution of products of putrefaction, usually in the intestines, but occasionally in other parts of the body. It may be absent during proteid decomposition if absorption is prevented, and it is conceivable that intestinal toxemia may occur without indicanuria. The severe forms of intestinal toxemia simulate cholera and may cause death within a week. No exact knowledge exists as to the precise manner in which the body protects itself from the poisons produced during proteid decomposition, but it is believed that the liver cells and intestinal mucosa have some such function. Clinically, indicanuria is more likely when the hepatic function is disturbed than when it is not. It not infrequently exists without symptoms, but there is no certainty that it is then harmless. The conditions that favor it are numerous. The importance of morbid conditions in the teeth, mouth, nose, etc., are too little recognized. Morbid conditions of the intestine and stomach, hernia, ileus, appendicitis, all produce favoring conditions for its occurrence. The author has emphasized elsewhere the importance of the recognition of indicanuria in typhoid. Constipation may exist without indicanuria, but it is exceptional. Acute attacks of toxemia are frequently associated with dark-colored, hyperacid urine of high specific gravity and indicanuria and as the toxemia increases in frequency and intensity or becomes chronic, with exacerbations, the long continued irritation of the kidneys may lead to chronic interstitial and parenchymatous nephritis. The circulation in the blood of the derivatives of putrefaction derived from the intestines causes varying degrees o fanemia which in extreme cases many simulate pernicious anemia. The toxins may also produce arteriosclerosis. The relationship of indicanuria to the nervous system is varied and most interesting. Neurotetinitis, neuralgia, pains in various parts of the body simulating rheumatism and gout, headache usually frontal, though sometimes in th evertex or occiput. The duration varies from a few hours to a few days and it may be kept up this for years with the cause unrecognized. Intestinal toxemia is as frequent a cause of headache as are refraction errors. Persistent insomnia has also been observed and chronic intestinal toxemia may induce or complicate cases of neurasthenia. Benefit from a milk diet in neurasthenia is not improbably the result of the suppression of an intestinal toxemia. Indicanuria is a common complication of the various forms of insanity and has been associated with epileptiform convulsions. It has hindered the favorable course of many cases of tuberculosis and diagnosis of such complication is essential in that disease. Catarrhal inflammations of the respiratory tract are aggravated by it, and skin diseases have been observed in connection with this condition. It is a common disease in itself and a frequent complication with other diseases and its removal is very frequently followed by marked amelioration or disappearance of many distressing symptoms.

THE EARLY DIAGNOSIS OF GALL STONE DISEASE.*

By JOHN EGERTON CANNADAY, M.D.

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It is not my purpose to speak of the classic symptoms of gall-stone disease in its final, sometimes hopeless stages. We are all perfectly familiar with them, but rather do I call to mind the early cry of the human organism for aid, the cry that comes at a time when "a stitch in times saves nine." It would seem that the average text-book writers of the standard works on the practice of medicine have had only in mind symptoms of terminal stages and dead house findings when they wrote their chapters on the diseases of the gall bladder. These text-books have been written by men we held in high esteem, and rightly so, but in this one little essential they are lacking. They will even presume to tell you that gall stones may be present in the gall bladder for years without giving symptoms. They might as well say that there may be a symptomless stone in the urinary bladder. I grant that it is quite true that in the course of ordinary abdominal operations one will find a number of cases of unsuspected gall stones, but if in these cases we will go carefully into the anamnesis of the case and induce the patient to call to mind all the past incidents pertinent to their disease, we will not fail to find plenty of symptoms easily attributable to incipient or even full-fledged gall stones.

A few of the more recent medical writers are widely awake to the fact that the early symptomatology of gall stone diseases has long been misinterpreted. Dr. A. O. J. Kelley, writing in Osler's *Modern Medicine,* says that "the symptoms of chronic, long continued or recurring indigestion are of the utmost importance as regards a diagnosis of gall stones." These symptoms of indigestion, having once occurred, are very liable to recur. The symptoms usually spoken of as stomach trouble, dyspepsia, etc., are often due to trouble outside the stomach, and the location of the trouble is frequently in the biliary passages. The attacks are often paroxysmal and may be severe. The medical profession must accept the fact that gall stones may exist for years and cause the patient a great deal of suffering without any evidences of gall stone colic or jaundice. The sooner we get over this fallacy of waiting for colic and jaundice the better off our patients will be and the gall bladder cases with their high mortality will become like the early appendix operation, of comparative safety. Gradually the public will, through the aid of the physicians, become educated to the necessity of early diagnosis and early relief.

It is perhaps possible for gall stones to exist in elderly subjects without causing particular trouble when the original infection has died out, and when there has been considerable atrophy of the muscular coats of the gall bladder and bile ducts. Sometimes after nature has done a sort of rough cholecystectomy and shut off the gall bladder from further participation in the affairs of the body the possessor will have few or no symptoms attributable to the gall bladder, that sac having been cut off and assuming the relative importance of a foreign body elsewhere encysted in the tissues.

In a case referred to me not long since there had been from time to time attacks of epigastric pain, diagnosticated by the family

*Oration on Surgery before the West Virginia Medical Society, September, 1909, Elkins, W. Va.

physician as acute gastric dyspepsia; there was very slight tenderness on deep pressure over the gall bladder region, yet on operation a hard, thickened gall bladder containing a number of good sized stones was found. In another case the patient had suffered for over ten years with recurring attacks of pain and tenderness over the region of the pylorus. A laparotomy disclosed the fact that the gall bladder was adherent to the duodenum and pylorus from former inflammatory storms in that region. Now and then one will find a patient having gall stones has had no actual pain in the epigastrium or elsewhere, but only a feeling of discomfort in that part of the body.

At that time the gall bladder may become adherent to the colon and perforation will take place so slowly that no particular symptoms will be produced; at the time there may, however, in this case be some colonic catarrh. The fact that pain subsides after attacks of gall bladder colic certainly does not mean that a gall stone has passed into the bowel; it only means that the inflammatory changes associated with pain in the gall bladder have subsided. The early stage of gall bladder disease is often confounded in diagnosis with ulcer of the stomach or duodunum.

We shall be amply repaid by a close and careful study of the initial symptoms of gall stone disease no matter how trivial they may seem to us, for there are thousands of sufferers who may be relieved. These earliest symptoms are referred to the stomach and not to the gall bladder or liver. There is a feeling of fullness, weight or distention in the epigastrium that is very annoying. This comes soon after meals, usually in half an hour or so, and is relieved by belching; vomiting does away with it entirely; certain articles of food are almost certain to bring it about, so that by and by the patient is found living on a very limited dietary. Moynihan says: "There is a sensation of great tightness which, if unrelieved, may become acute pain, from which the patient obtains ease by bending the body forwards, by fixing the right thigh on the abdomen, or by loosening all the garments which fit tightly to the waist. While the discomfort lasts the patient may notice a 'catch' in his breath and he finds perhaps that it is impossible to breathe deeply without feeling an acute stabbing pain of the right costal margin; there may be a feeling of faintness and nausea and rarely vomiting may occur spontaneously. After a more than usually severe attack of 'indigestion' the body and side may feel stiff for several days. A frequent and very characteristic early symptom of cholelithiasis is the occurrence during an attack of indigestion of a slight sensation of chilliness, especially in the evening, after a meal. The patient may shiver for several minutes and may hasten from the table to huddle over the fire. The sensation of 'goose flesh' is often experienced and several patients have said that in the severer phases it was not unlike a very slight rigor, the chilly stage being followed by one in which the body feels hot and the skin begins to act freely." These are the group of signs aptly named by Moynihan, in one of his latest addresses, inaugural symptoms. Some have summed up this entire symptom group as "gall bladder dyspepsia."

It is quite clear that these inaugural symptoms go often unrecognized when we consider the fact that about every tenth human being and every fourth or fifth woman past middle age has gall stones. It is unusual and most rare for the requisite symptoms to be absent when stones are contained in the gall bladder. If the cystic duct is entirely closed and the gall bladder atrophied the stones may at last become silent. But this at best is a smouldering volcano apt to erupt at any time.

The feeling of discomfort in the epigastrium may at times approach in the nature of pain and may radiate to one side or the other when more severe; this pain may go to the right shoulder; at times when the chest fills with air on inspiration a sudden stabbing pain cuts short the respiratory effort. This diagnostic point is very characteristic of gall bladder

disease. Weight and fullness in the head, drowsiness, dull headache are often concomitant symptoms. There may be occasional attacks of migraine; mental concentration becomes burdensome.

Against the advocacy of the Carlsbad or other treatment for this early stage of gall tract disease I beg to decidedly protest. In the days of Montaigne it was held to be good practice to allow the latent urinary bladder stone to lie latent; this is a parallel instance with only a difference of locality. Gall bladder calculi have far greater possibilities for danger to human life than calculi in any other part of the body, and the time will come when it will generally be considered bad practice to allow them to remain unmolested.

These cases of early gall stones are a constant annoyance to the patient in most instances. By constant care, the avoidance of indigestible articles of food, and daily doses of some laxative mineral water the symptoms may be held in check for a long time. But the trouble is not removed; there are many dangers, immediate and remote. Retrograde changes may be brought about in the gall bladder, liver and pancreas, all of very serious nature. The long continued irritation of the gall bladder not infrequently results in carcinoma. Perforation of the gall bladder or an acute suppurative cholecystitis may take place.

The chief arguments pro and con for drainage or removal of the gall bladder depend on the habit of the surgeon whether he operates early or late when gall stone disease is in its beginning, the gall bladder is in almost normal condition and may easily take up its functions again. The gall bladder that has been affected for years is often a mass of scar tissue, its muscular contractile function destroyed. The character of its mucosa is entirely changed. These last gall bladders we know are practically functionless foreign bodies.

As the matter stands there are two well-defined courses open to us, we can by proper study of the inaugural symptoms make an early diagnosis and do an operation that is largely prophylactic in nature or we wait for symptoms of terminal stages and do as a last resort an operation, the mortality chances of which will be great. We have not even considered the untold amount of suffering that must be endured while waiting for the above mentioned terminal stage.

I recall another illustrative case: a woman forty years of age had been suffering from what was considered some chronic stomach trouble for over five years. There was a great deal of distress and flatulence with but little pain. This patient was highly neurotic and some of her medical advisers had been of the opinion that her troubles were of a functional rather than organic nature. She had attacks of muscular cramps, shortness of breathing, etc. Eventually operation was decided on and a number of stones were found in the gall bladder.

SYPHILLIS.

By W. FRANK GLENN, M.D.
Nashville, Tenn.

There is no disease about which there are more fabulous ideas, more erroneous impressions and more misconceptions than syphilis. At the same there there is no disease more far-reaching in its effects or menacing to society. Again, there is no other class of diseases concerning which the general practitioner keeps his study and application up less than venereal diseases. Many of them get fixed ideas when they are at college and take no pains to note the advancements along this line. To some extent they are excusable for this lack of knowledge, for in their practice they seldom see a case of syphilis, and it is a fact incontrovertible that physicians, as a rule, do not take the trouble to study carefully diseases which they seldom come in contact with. This applies also to men in large cities who have other specialties and are not so often called upon to treat syphilis. For example, eye and ear specialists, general surgeons, abdominal surgeons, etc. This class of men are very busy with their special work and take little time to keep fully up on venereal troubles and are therefore unconsciously not prepared to give a patient, suffering with syphilis, gonorrhea, or their sequela, the most approved treatment or prognostic judgment. Now this is all right, but the crime against society, and one which reflects seriously on the profession, is that the vast majority of those men will undertake to treat any disease in the whole domain of medicine or surgery, instead of telling their patients frankly that they do not keep well up on such diseases, and refer them to a specialist in the same manner that genito-urinary specialists refer abdominal work, eye and ear work and general surgery unhesitatingly to them. In my own practice I have referred every operative case of appendicitis, ovarian, uterine, or eye or ear troubles to a specialist, yet in many instances I have known of men who made a specialty of eye, ear and throat diseases to take charge of a case of syphilis and treat it entirely, because the patient consulted them for sore throat, which proved to be syphilitic. Now, in all candor is this just to your professional brothers or fair to your patients? But I have digressed, as I started out to say something of syphilis and the various superstitutions in regard to it. Many doctors have encouraged the old idea that syphilis is liable to result into consumption, scrofula, etc., when it is as impossible for the syphilitic virus to beget anything but syphilis, as it would be for a hen's egg to hatch anything but chickens. *"Like begets like"* is an absolute law, and syphilis therefore never produces anything else but syphilis. Another one of the erroneous impressions often conveyed to the patient's mind is that a gonorrhea or a chancroid may change into syphilis, or vice versa. This, of course, is an utter impossibility, for every venereal disease is caused by its own specific germ, which can only produce that disease and can no more change into another disease than a chicken can change into a turkey after it is hatched. I often have patients tell me that some one else told them (some times a doctor) that you could catch syphilis as often as you come in contact with it, when the truth is that one attack grants an immunity from future attacks even though the patient comes in actual contact with the syphilitic virus. He is no more liable to the second attack of syphilis than he

would be of smallpox. Finally, in regard to the ineligibility of the person who has had syphilis for marriage. This is indeed the most serious aspect of the case, but when I hear of prominent doctors saying that a person who has had syphilis should never marry or beget children, I am shocked at their ignorance. It is a most pitiable condition of society whose laws do not require the same chastity of the husband as the wife; which allows a man to lead a life of debauch for years, having perhaps gonorrhea and syphilis both, and a few years later when he comes to choose a wife, she must be "chaste as icicles, curded by frosts of purest snow, that hangs from Diana's temple." Alas, poor wife, God only knows what trials, what heartaches, what sufferings she endures as a result of her husbands' immorality, both before and after marriage. Whenever the husband realizes that his marriage vows are the most sacred of any oath he can take, and that when he violates them he is a perjurer, pure and simple, whenever he feels that he should be as true to his wife as he expects her to be to him, then the world will be rid of a large proportion of both physical and mental anguish. But the important question confronts us, after a man has had syphilis, can he marry and safely have children? Now, I will answer this question from a scientific standpoint backed by thirty years' experience. When a man has had proper treatment, both hygienic and medical, for a sufficient length of time, and has been free of all symptoms for one year subsequent, he may marry with absolute impunity. While I say this, I also urge vehemently that he should never marry unless he has had proper treatment continued for a sufficient length of time to free his blood from the syphilitic virus. In a future article I will give my views as to the proper methods of treating syphilis.

First National Bank Building.

PHYSIOLOGIC GASTRIC JUICE IN THE TREATMENT OF TUBERCULOUS DISEASES.

By J. D. Nagel, M.D., New York. (New York Medical Journal, Jan. 15, 1910, p 129.)

Since the ability to take and assimilate nourishment in large amounts constitutes one of the chief dependences of treatment in tuberculosis, to increase the appetite and strengthen the powers of digestion are of the first importance.

Dr. Maurice Hepp, of Paris, found that the pure gastric juice of the pig when given even in small quantities to patients suffering from weakened digestion would quickly restore the normal function. In order to obtain the gastric juice uncontaminated by food particles, he devised a novel operation on the pig consisting of the establishment of a gastric fistula at the cardiac end of the stomach after separating the œsophagus from the stomach and permanently anastomosing the former to the duodenum.

The author, after observing the beneficial effects of the agent in patients suffering from deficient gastric secretion, dilatation of the stomach, gastro-intestinal catarrh, etc., began to use it in the treatment of pulmonary tuberculosis, and reports a series of forty-four cases in which the results were uniformly favorable.

The cases were: (1) Incipient, eight; (2) first stage, twenty-six; (3) advanced stages, ten Of the first class seven were cured, one disappeared after great improvement three weeks from the beginning of treatment. Eighteen of the second class were cured, four improved, two unimproved, and two remained under observation only two weeks. The ten patients of the third class were all greatly benefitted but a fatal termination of course not prevented.

The dose of the gastric juice recommended is one to two tablespoonfuls well diluted three times a day before meals.

GENERAL SURGICAL ANESTHESIA.

By J. W. BAUMAN, M.D.,
Nashville, Tenn.

In surmizing the causes for the rapid strides made in surgery, one factor stands out pre-eminent, anesthesia, as I believe, the greatest cause for successful surgery, for without general anesthesia the surgeon could not have made these advances. It has helped make surgery a specialty; stimulated more young men into the study of surgery; made surgery more accurate and successful than it could ever have been, for what advances could the surgeon have made with the many beautiful plastic operations; the many delicate and wonderful operations of to-day, saving lives and making the ways of many pleasurable and happy, which, of necessity, would have been ways of invalidism and suffering without surgery?

To Dr. Morton we owe a debt as a profession, he being the man to first introduce ether as a general anesthetic, when in 1846, he first used it as a general anesthetic for Dr. Warren, of Boston; he also was the first successful anesthetizer.

Without going further into the history of general anesthesia, as this is not included among the points of general anesthesia we wish to consider, we purpose to study the physiological actions of the drugs that produce anesthesia; the modes of giving preference of anesthetics; the emergencies that may arise during their administration, and treatment of same, and last, but not least, to advise its more careful use. A safe anesthesia depends on: First, the selection of the best anesthetic for the individual case; second, the proper preparation of the patient, and, third, an anesthetizer who has had training, who will confine his time in strict attention to the patient and not to things happening around him.

In consideration of the first we may take up briefly the physiological action of ether, chloroform and nitrous oxide, these three being the only ones we care to consider or discuss. Ether first produces a sense of strangulation and cough, then a state of cerebral intoxication, which manifests itself in excitement; the face is flushed, and the pulse and respiration are accelerated. Following this is a state of tetanic convulsion, the face being cyonosed, the muscles rigid and the respiration stertorous. (I would state, though, that the open method has greatly modified these extreme excitement symptoms.) These sooner or later subside, and the patient enters into the surgical degree of anesthesia, complete insensibility, the muscles relaxed, reflexes abolished and the cerebral functions suspended, the lower centers of the medulla carrying on the processes of respiration and circulation. Ether increases arterial tension, and acts as a cardiac stimulant to the respiration also. On the nervous system it acts as a paralyzant, affecting first the cerebrum, next the cerebellum, and later, the motor functions of the medulla. If ether is pushed beyond the surgical degree, the respiratory and circulatory centers also become paralyzed, death usually resulting from paralysis of respiration, the heart continuing to beat sometime after the breathing ceases; the hemoglobin percentage is nearly always reduced, which means the oxygen carrying capacity of the erythrocytes is reduced.

Kidneys—The concensus of opinion is that while it causes more or less irritation during anesthesia, this effect is of short duration and the kidneys not seriously diseased. According to the findings of Carl Beck, out of

300 non-albumenuric ether cases, 97 had a distinct albumenuria. Robert F. Weir believes that ether has no marked effect upon healthy kidneys; that it is safe in slight kidney diseases, and that circulatory disturbances that do occur in the kidney quickly subside. Lengerman and others, after experimental researches, claim there is no special degenerative action on healthy kidneys. At any rate, it seems to be the concensus of opinion that such changes occur very seldom, and then only to a slight degree. Mullish claims that all especially unpleasant effects of ether on the kidneys have been due to careless selection of cases and faulty technic. Cases of anuria have occurred after ether narcosis in persons with chronic nephritis. In such cases general anesthesia is contra-indicated. In advanced nephritis, local anesthesia should be employed in preference to general, but if a general anesthesia must be given, nitrous oxide or ether are probably the safest. Much depends on the case before, during and after anesthetic.

Respiratory Tract: Ether is distinctly an irritant to the membrane of the respiratory tract, markedly increasing the mucous, the degree of irritation depending much on the technic of administration. Lung oedema is present more or less during administration of ether and for several hours after, and increases the dangers of hypostatic and aspiration pneumonias.

Cardio-Vascular System: Ether causes a temporary rise in blood pressure, followed by a moderate and gradual fall; the capillaries are dilated, the vascular tension increased. It produces no marked degenerative changes in the heart.

Chloroform: The inhalation produces on the whole, sensations which are rather agreeable than otherwise. After a few whiffs, the patient experiences noises in the ears and light before the eyes, also a sense of weight upon the chest. The heart is felt to be beating wildly, and a throbbing sensation is felt in the carotid arteries. In the first stage, hysterical symptoms may become manifest, such as laughing, screaming, crying. (This also takes place during the administration of ether, but not to such a degree.) In a very short while all sensations of discomfort disappear, the patient breathes easily and is evidently asleep, the consciousness being affected; questions being heard, but not understood. After a brief repose, there may be another spell of excitement, during which the patient may struggle and attempt to get up. (It is in this pre-surgical degree of chloroform anesthesia that so many accidents occur, especially in operations about the mouth, tonsils and the region of the fifth nerve. I would especially urge that during any operation under chloroform anesthesia, the anesthetizer be sure that the patient is anesthetized to the full surgical degree before he allows the operator to begin work.) After this stage the muscles become flaccid and the patient gradually assumes a condition of complete insensibility, all reflex actions are abolished and pain is not experienced; the pupils are contracted and the limbs when let go fall heavily.

Chloroform causes a more marked diminution in the per cent of hemoglobin than ether. Experiments on healthy animals and autopsies on man prove that chloroform produces fatty degeneration of kidneys and liver. Eisendrath reported that albumenuria was present in 15 per cent of 650 cases after chloroform anesthesia where there was none before, and in 6 per cent of 1,500 cases of ether; casts were found unaccompanied by albumen more frequently in ether anesthesia.

Respiratory Tract: The first effect produced by chloroform is reflex irritation of the vagus through the terminals of the fifth nerve in the nose. The later effects on the lungs and bronchi are similar to ether, only less pronounced. A large proportion of chloroform taken into the system is eliminated by the pulmonary mucous membrane; being heavy, it is eliminated slowly. It undoubtedly lowers the physiological resistance and leads indirecty to bronchitis and pneumonia.

Cardio-Vascular System: Frankel proved,

beyond a doubt, that fatty degeneration and fragmentation of heart muscles follow the administration of chloroform as an anesthetic. Lengermann found the amount of chloroform given made very little difference in the extent of fatty degeneration of different organs. While a certain amount of chloroform must be in the circulation before fatty degeneration can be produced, he found that amount was present, when sufficient chloroform had been given, to produce narcosis. A large proportion of cases of fatty degeneration of the heart in man occurred after prolonged anesthesia, for two or three hours.

The Hyderobad Commission, under the direction of Dr. F. Lander Brunton, was led to the conclusion that chloroform and ether act in the same manner on the heart and respiration, both paralyzing the respiratory center before the heart, with chloroform acting more powerfully and more quickly in both directions. Yet, there are a great many good men (and I think the ranks are thinning out), who hold that chloroform kills by cardiac paralysis. There is very little doubt that chloroform, in some cases, may paralyze the heart without first affecting the respiration, but in a large percentage the respiration is first arrested.

Nitrous Oxide: Is a true anesthetic; is given with admixtures of oxygen, pure or atmospheric, and produces a quiet anesthetic state without asphyxial phenomena. It is almost non-irritant to the respiratory mucous membranes and causes a distinct rise in blood pressure. While there is a slowing of cardiac action, soon there is a fall in arterial pressure and the heart beats faster, due to vaso-motor processes. The respiration is labored, and may be arrested by obstructive stertor or spasm of respiratory muscles. Given without admixture with oxygen, it produces asphyxia, manifested by stertorous breathing, cynosis and dilitation of the pupils. The time consumed in narcotising a patient with nitrous oxide is very short, usually about one minute.

The after effects of nitrous oxide are as a rule transient, producing a slight dizziness or headache lasting a few minutes to a few hours.

Nitrous oxide is by far the safest anesthetic, according to H. C. Wood, but it is not entirely without its dangers. A conservative estimate of death rate is from one to three in 1,000,000 narcoses. When death occurs, it is by paralysis of respiration, dependent quite as much on cerebral anemia from defective circulation as on presence of un-oxygenated blood in vessels supplying the respiratory center. When given in mixtures containing a moderate per cent of air or oxygen, 35 per cent air or 13 per cent oxygen, respiration becomes noiseless and free from obstruction.

Concluding our study of the physiological action of these drugs, we have now the trying ordeal of selecting the safest. The one we select should meet these conditions:

First—Best calculated to produce and maintain muscular relaxation with the minimum ill effects.

Second—Less depression shock, vomiting, less disagreeable to take, less respiratory troubles, such as cough, pneumonia, bronchitis, renal disturbances, straining, etc., and especially the one best adapted to the individual case.

In the vast majority of cases, our choice lies between ether and chloroform. Between these two there are good men who hold our choice should be chloroform. Such contentions, I am sure, are unwarranted and biased. The result of experiments and experience of our best researchers are overwhelmingly in favor of ether. Ether when properly given with the open method, meets all the above requirements, and more. In chronic nephritis, it is much safer than chloroform; the only serious contra-indication to its use may be acute bronchitis or asthma, and these objections may be overcome by hypodermic injections of atropine before th administration. In extreme artero-sclerosis, the blood pressure may be relieved by nitro-glycerin. Ether is even to be preferred in children and obstetrical practice.

The safety margin between sufficient ether and the lethal dose is much greater than with

chloroform. Ether is much safer with the inexperienced anesthetizer, as he has more warnings of danger, and has longer to overcome them. He should always use ether, except where it is especially contra-indicated, and that is very rare indeed. Public opinion is also much in favor of ether, hence, if an accident should happen, the surgeon is less liable to blame.

There is no argument sufficiently strong to prove chloroform a safer or better anesthetic than ether. As to nitrous oxide, it has its field, and is an excellent anesthetic, especially when a thorough relaxation of the patient is not required, statistics proving it to be a far more safe anesthetic than ether or chloroform. A great many peope object so seriously to ether or chloroform, that in nitrous oxide, when not contra-indicated, we have an ideal harmonizer; and it often assists a surgeon in collecting a fee.

Having selected what we deem the best anesthetic, we pass to a consideration of the second point under discussion: Proper preparation of the patient. In all cases, when possible, the anesthetizer should know something about the patient, especially his habits and nervous state. The patient's urine should be carefuly examined, the heart and lungs examined, and the patient assured of his safety while going under the anesthetic; of course, any heart or serious kidney lesion should be made known to the patient's family or friends. The patient should not have solid food for at least six hours before the anesthetic; he may have water or liquid nourishment up to a short time before. Some advise a glassful of cold water just prior to the administration of an anesthetic.

In cases of emergency, or when the patient demands immediate operation, of course, we haven't time for all these preparations, then the anesthetic should be watched all the more closely. Especial attention should be given to the warmth of the patient; the room temperature should be between 80 and 85 degrees Fahrenheit, and kept at such, as all anesthetics serve to lower the body temperature, in prolonged anetshesia the temperature dropping as much as 3 degrees Fahrenheit. Depression of the nervous system and lowering of blood pressure correspond very closely to loss of heat. Ether especially causes profuse sweating, which, by evaporation, causes loss of heat. Proper covering, hot-water bottles and atropine as a vaso-motor stimulant serve to assist in keeping up the body temperature.

Under this head we may mention another important point, that is, everything should be at the finger tips for emergencies; remedies for hypodermic use, tongue forceps, ice, oxygen, etc. No one can tell just what case is "going bad," so to speak, and when we need these remedies, we need them quickly; no time to wait, especially at this time when so many lose their heads. An anesthetizer should no more begin an anesthetic without these means of meeting emergencies than an army should engage an enemy or fight without ammunition and proper implements of warfare. Dangerous is the man who is neglectful, or who considers giving anesthetics lightly. Anesthesia is often more dangerous to the patient than the operation.

While giving an anesthetic, there should be no undue noise of talking, as this prevents the patient taking it so well. It diverts his attention and often increases the length of the stage of excitement. Only those who assist should be in the operating room during the first stage of anesthesia. Some patients, especially women, experience peculiar sexual phenomena. These delusions sometimes become fixed in their minds. Accusations of disrespect and undue exposure may cause the anesthetizer much trouble.

The time-honored method of telling the patient to take a deep breath (driving him, so to speak), I think is open to criticism. It often causes stoppage of breathing very early in the administration. The patient should always be in the recumbent position, and should be instructed as to what sensations he may experience. Tell him to close his eyes tightly

and think of sleep, and more often, if the anesthetic be given slowly, which is the only way, he will pass quietly into the surgical degree with barely any excitement. Try to calm his fears; impress upon him that he is doing nicely and going to sleep, and all is well, and you will find that your patient and yourself escape lots of struggling and athletic feats; especially in alcohoic and drug habitues is this true.

In patients with pronounced anemia a hemoglobin estimate should be made, and if found to be below 40 per cent, great apprehension should be felt in giving an anesthetic, as anesthetics diminish the oxygen carrying element of the blood. In these cases, if conditions permit, they should be put on highly nutritious diet and the resisting power of the patient raised.

The patient should be placed at once on the operating table and anesthetized. I do not believe in changing the patient from one room to another, or from table to table, as it disturbs the anesthesia, causing vomiting, struggling, and often produces alarming symptoms. W. A. Briggs recommends the use of oil of peppermint before the administration of ether. About a dram of a 50 per cent alcoholic sloution is dropped on the inhaler and the patient allowed to inhale for about three minutes; then ether is pushed as rapidly as is consistent with safety.

The advantages he claims are: First, that anesthesia may more rapidly and easily be produced; second, entire absence of coughing and suffocation and comparative freedom from vomiting and retching; third, suppression, more or less complete, of stage excitement; fourth, less post-anesthetic nausea. This would seem advisable in children and also with some adults; it deserves consideration at least.

I have used ar. spts. ammonia in the same way with very pleasant results. It overcomes very much of the irritating properties of ether on respiratory mucous membrane, also, pleases those to whom ether fumes are so objectionable.

Passing to the third point of our paper:

I believe the time will come, and it has come in some instances, when giving anesthetics will be a specialty, and the surgeon will no more trust an inexperienced and careless anesthetizer than he would dare trust an inexperienced operator to operate on him.

A good anesthetist should be able to gain the confidence of the patient; he should be pleasant and agreeable, not harsh and commanding, for much depends on this one point, as it is the patient who is scared, nervous and antagonistic, that you are very apt to have trouble with. Let the patient think you consider his whims and fancies, and he will not be antagonistic, but will do everything he can to help you. Dont' pour the anesthetic on in a stream while your patient is about to smother and is straining every fibre in his body; begin by letting the patient get used to the mask, then, drop by drop, until the mucous membranes become accustomed to the irritating properties of the anesthetic. Gradually increase the frequency of the drop, and you will avoid much of the struggling and gain friendship with your patient.

The time for producing ether narcosis by the open method is put down as from five to ten minutes, yet I would much rather take 20 minutes; this eliminates much of the struggling, accumulation of mucous, post-anesthetic vomiting, depression, shock and detracts not the least satisfaction from your patient. Don't let the surgeon hurry you up. You are responsible for the patient, and should be allowed to give the anesthetic as you see best. Of course, I do not mean to consume undue and valuable time, for we know the less anesthetic the patient takes, the better it is; what I mean is not to try and break records by jeopardizing your patient's life. Let the surgeon break the records as seems to be his delight.

As soon as the patient begins to lose consciousness, turn the head to one side (usually to the left); keep the fingers of the left hand

hooked under the lower jaw at junction of ramus and body of inferior maxilla; push the jaw slightly forward. This also pushes the tongue forward and prevents its falling back, and allows more room for inspiration and expiration; at the same time, keep your index finger on the facial artery. The dropping or relaxation of the lower jaw is one of your first signs that narcosis is approaching. Very often, during the early stages the pupils dilate widely, and are rather sluggish to light, yet the eyes are mobile and reflexes are not lost. This often occurs in what we may term the "pre-surgical stage," (a dangerous stage to begin operations). If the pulse, respiration and color is good, you may continue with the anesthetic; if not, give the patient a whiff of air. It may be the ether is too concentrated; clear the mucous from the mouth; this usually serves to relieve the symptoms.

How do you know the patient is ready for the surgeon to begin work? We have mentioned during the third stage the reflexes are abolished, there is complete muscular relaxation, and the breathing is quiet and regular. The eye reflex, as a rule, is lost. It is not necessary to touch the cornea; pinch the upper lid, and if no response, you may say the reflexes are lost. After the surgeon has made his skin incision, it does not require holding the patient so deeply under; of course, watching for any signs of coming-out, which is apparent, deep inspiration being one of the first signs.

Much of the vomiting and retching can be avoided, if the patient has been properly prepared, properly managed and the anesthetic given skillfully, as can post-anesthetic vomiting. Remove the patient from the operating table carefully; put him in bed and keep him absolutely quiet; darken the room. Don't try to awaken the patient to hear him talk silly or allow anyone else to do so, as it induces vomiting and a noisey reaction. The family and friends should stay away until the patient has reacted and awakened. Gastric lavage is also an excellent preventive of post-anesthetic nausea and vomiting. If vomiting does persist, one drop of tr. iodine (repeated if needed), often controls it.

Here I may mention my personal experience with tubercular patients. All of them take an anesthetic well, and their recovery from it is remarkably rapid, compared with others. Patients with malignant tumors (if not too far advanced), also take it well. Patients requiring perineal operations, especially women, usually take anesthetics badly, as do rectal cases, due, possibly, in a measure, to their nervous state.

How are you going to tell when your patient is doing well and all is progressing nicely? First of all, watch your patient, and not the operation. You are not the operator, but the anesthetizer, and to the anesthetic you are alone responsible. The pupils are one of the best signs you are to be governed by.

Of course, we are not to be governed by any one symptom. Always inspect each pupil to see if they are alike; one may be bound down by adhesions, or one permanently dilated. A contracted immobile pupil usually indicates safe anesthesia. A rapidly dilating pupil is a red light held up to you that danger is approaching. A fixed dilated pupil, inactive to light, means extreme danger, and also means, remove the anesthetic at once. A pupil oscillating between contractions and dilitation usually means the patient is coming out. The pupil, too, is influenced by the first incision, especially through the peritoneum. It often dilates from shock, manipulation of extremely sensitive parts, dilitation of sphincters, uterine os, etc. At this time be careful and do not be lured into the temptation of pushing your anesthetic, as it is likely you will give the patient an overdose. Usually the patient takes a deep inspiration and gets more of the anesthetic than is intended. It is much better to partially withdraw the anesthetic. The respiration should be free, easy and regular, simulating much a restful and deep sleep, with slight increase of number of respirations per

minute. Snoring and stertor are either due to partial obstruction of respiration or too much anesthetic. In ether, especially, keep your eye on respiration. If it becomes shallow and increased in rate it demands attention and means applied to combat it at once. The pulse, which has been increased during the early stages, should become slower, regular and fairly firm. With a rapidly increasing pulse, diminishing in volume, determine at once whether this is due to the anesthetic or the operation. It indicates shock, and is caused from too much anesthetic, the seriousness of the operation, hemorrhage, or lowering of the body temperature. The color of the skin should be watched. Blueness is almost always caused by asphyxiation. Slight blueness may be present in many cases of etherization and not be of much significance if the patient's general condition is good. Yet, they will bear watching.

Bernette shows a distinction between asphyxia arising from trouble with respiration and a condition caused by a reduced per cent of oxygen, or by an increase in per cent of carbon dioxide, or both, in the blood during anesthesia. His theory is that asphyxia is caused either by deprivation of oxygen or to a partial paralysis of centers of respiration by an over-dose, or to a well recognized condition in which cyonosis is present with freedom of respiration and no deprivation of oxygen. He attributes the condition to the effect of the anesthetic on the blood corpuscles, which causes an interference with their function, or to a partial arrest of the pulmonary circulation, in which there is a disturbance in the oxgenation of the blood. Asphyxia is also caused by mechanical obstruction of the air passages, either external or internal. Examples of the first, goiter, enlarged glands; of the latter, adenoids, neoplasm, mucous, blood, etc.

The one condition of the face that always causes the blood of the anesthetizer to chill, and I believe, with the exception of that fixed inactive, dilated pupil, the one condition that should always demand immediate attention, is that abnormally pale ashen-gray appearance, spoken of as the "white man" in contradiction of the "blue man." Usually the body is bathed in profuse perspiration, the nose, lips and ears are cold, the patient has a mottled appearance, the pupils dilated, usually fixed and inactive, and having every appearance of your patient passing on to "Abraham's bosom." A picture certainly not soon to be forgotten.

The anesthetizer should watch the pulse, pupil, respiration, condition and color of skin, and should not depend on any single symptom to arise before he discovers danger. There is no fixed rule, only meet each single symptom that arises, and always weigh each symptom carefully, no matter how slight.

How are we going to treat these emergencies as they arise? And they will come to any one who gives anesthetics, no matter how expert he may become. It behooves every one who gives anesthetics, to know how to treat them, for the conditions arise when we haven't time to consult our text-books, and again, they may occur when we least expect trouble. Above all, keep your head; your undue excitement will only delay matters. Meet each emergency promptly; act quickly, for golden opportunities occur early not to return and every second may count in resusitating your patient.

When giving chloroform, the conditions nearly always arise with but little warning; while giving ether, we, as a rule, have plenty of warning; their significance should not be under estimated. If your patient's pulse begins going up or becomes weaker, try and ascertain the cause, then meet the condition promptly. Don't wait until his cutaneous circulation is suspended before you use your hypodermic medication; use it while the circulation can take it up, and you will usually get results. If the respiration becomes shallow, more rapid, together with cynosis, signs of asphyxiation, remove your anesthetic at once and apply appropriate measures for its relief.

There has been some objection raised as

to the use of hypodermic medication during narcosis. I cannot conceive of any objection that is worth comment. I would rather consider it criminal not to use it when indicated, and know there is no doubt as to its good results. I think too many wait until the circulation is at too low an ebb to take it up. Use it early and in sufficient doses to do good, and you may more than once escape a sad experience.

If in doubt as to whether your patient is beyond the safety line, or this side, remove the anesthetic, and wait until symptoms appear that assure you of safety or otherwise, before you continue; you owe it to the operator and the patient to give them the benefit of your doubt.

As a routine, we have the following means of combating dangerous symptoms as they arise: First, remove the anesthetic and give the patient all the fresh air possible; push the lower jaw forward, seize the tongue with forceps and pull it forward. (Don't try to amputate it.) Second, if there be no large pelvic tumor or other possible contra-indication, lower the patient's head. If the case is very urgent, raise the pelvis and lower extremities higher than the head and shoulders. Third, give hypodermic medication. The following are used: strychnine, spartein, sulphate digitalis, nitro-glycerin, adrenalin chloride, atropia. I prefer spartein sulphate if the heart is failing, at least two grains as initial dose. Adrenalin chloride m 20 to 30 and repeated in ten or fifteen minutes if indicated and strychnine sulphate gr. 1-15. Fourth, use artificial respiration by Sylvester's method, always beginning with expiration that you may get rid of all the anesthetic possible. Do not use this too rapidly; try and imitate normal as near as possible. Fifth, rub the extremities forcibly towards the heart, or compress the abdominal aorta, that all the blood possible may be in the region of the heart and great nerve centers, where, at least, during this period of shock, its presence is vitally important. Sixth, dash alternately, hot and cold water over the front of the chest, also use ice suppositories in the rectum, as it sometimes by reflex action, will bring about deep breathing, as will also dilitation of the sphincter ani. Seventh, faradize the diaphragm through the phrenic nerve by placing one pole on pit of stomach and other over base of neck at external border of sternomastoid muscle. Eighth, hypodemoclysis, intra-venous injections, subcutaneous injection of normal saline solution, which is of great value in shock and loss of blood.

If all these means fail to resuscitate your patient, keep working; don't despair. Try these means over again, time is no object if you can save your patient. Never give a case up under an hour's faithful work.

Death may occur in various ways during the administration of an anesthtic; first, it may occur suddenly from paralysis of the heart. This is likely to happen when the vapor is administered in too concentrated a form; or from a patient suffering with a fatty or enlarged heart. Second, from asphyxia with its many causative factors. Third, by coma on account of violent congestion of brain, especially in alcoholic and epileptic subjects. Fourth, by entrance of vomited material into the larynx and trachea. Fifth, may occur by a combination of causes mentioned, associated with traumatic or surgical shock.

In conclusion, let me impress on all who, at any time, administer an anesthetic to be careful, watch every phase, and pay strict attention to the patient. Of course, the perfect anesthetic or anesthetizer may never be found, for there is always an element of danger in the production of unconsciousness, yet, much can be done to advance toward a degree of safety.

The surgeon can do better and faster work if he has confidence in the anesthetizer, and you can give better anesthetics if you are aware of his confidence.

422 Monroe Street.

SO CALLED R. H. REFLEX NEUROTIC SYMPTOMS, AND THE PSYCHIC FACTOR

By TOM A. WILLIAMS, M.D.,
Washington, D. C.

At one time tremendous emphasis was laid upon the irritation of the nerve terminals as a source of neurasthenia, hysteria and neuroticism in general. Innumerable turbinates have been shaved, appendages removed and errors of refraction corrected on account of this notion. But extended experience has convinced even the most ardent specialist in rhinology, gynecology and opthalmology, when they are possessed of a scientific honesty and clear-mindedness, that comparatively few neurotic cases arise from purely reflex irritation.

There is still, however, much confusion as to the genesis of the psycho-neuroses. The source of this confusion lies in the want of clear differentiation between symptoms favorable to the autonomic nerves and those which often so closely resemble them, although originating psychically. A few samples will make this clear.

The abnormal frequency of micturition in the earlier period of gestation has its source, in all probability, in the stimulation of the different nerves from the neck of the bladder on account of the stretching of the tissues around the utero-vesical pouch by the rapidly expanding uterus. Any impulse passing by this track is necessarily interpreted as an irritation of the mucous membrane by urine, which experience has taught us to associate with need for micturition. There is really an illusion, comparable to that in one's toes when the nerves are stimulated in the stump of an amputated leg, or in the more familiar "funny bone" experience.

Now, the sensations derived from these are totally unamenable to psychic influences, although of course the patient's response to the sensations is modifiable by the will.

Very different is the case of the nocturnal incontinence of children, perhaps one of the most typical of the misunderstandings of the theorem now being illustrated. This affection is purely psychogenetic, for it is due to a failure to educate the cortical inhibition so that it may maintain itself during the relaxation of sleep.

In connection with this, there is another common misapprehension that during sleep consciousness is suspended. That is not the case, as innumerable examples prove. Only two of these need be cited. One is the power which many people possess of appreciating the lapse of time while they are asleep. They can approximately judge the hour when they awake accidentally during the night, and can determine in advance the hour at which they should awake in the morning. Another series of facts shows that we are not even insensible to peripheral stimulation during sleep. For instance, by stimulation of the skin, muscles, or special senses the contents of dreams can be determined; not only that, but direct ideas can be inculcated in speech, and a psychotherapeutic method has been based upon this fact, especially in childhood; indeed, it has been particularly applied to incontinence of urine, on account of the supposed efficacy of what its exponents are pleased to call the "subconscious." We need invoke no such hypothesis; for suggestion during sleep, hypnosis, or any other "passive" state is more effective merely because the idea invoked then dominates the field of consciousness uninterrupted by other extraneous stimulations; hence it is much more easy to gain the attention and make an idea penetrate in these states; but the technical skill which we call persuasive power is capable of doing the same, with the subject in no matter what state. The problem is merely one of fixing an idea in the patient's mind so that it may energize towards the desired end.

758 K Street.

PROTECTION OF THE PERINEUM IN FORCEPS CASES.

By EDWIN B. ANDERSON, M.D.

Chattanooga, Tenn.

For several years I have noticed that many women have been lacerated and gone through life without having the laceration repaired. As a result the woman is not strong, she has a cystocele and a rectocele, and in many instances a prolapse of all of the pelvic organs.

Lacerations are usually due to large heads and broad shoulders, rigid perineum and too rapid delivery.

It is not the purpose of this brief article to discuss the various methods in use, but to mention what is not considered in the different text-books. I have been using this method for some time, and a laceration is the exception.

Cleanliness should be scrupulously carried out or there may be cause for regret, though this has not been my experience.

With the patient under chloroform she is placed across the bed and two assistants hold the legs. The bladder is emptied and the vagina is irrigated with an antiseptic solution; the hands are well lubricated with carbolated vaseline, and all four fingers of both hands introduced into the vagina so as to thoroughly dilate the vagina and *especially the vulval outlet.* Then if you want to be even more certain of saving the perineum, you may divulse the sphincter ani muscle under strict antisepsis; then scrub up the outer parts and apply the forceps. As the head is brought under the pubic arch, flex the legs thoroughly, and as the head passes over the perineum straighten the legs.

7 West Eighth Street.

PRURITUS ANI, ITS ETIOLOGY AND TREATMENT.

By T. Chittenden Hill, M.D., Boston Mass.

(The Proctologist, Sept., 1909.)

Pruritus ani is practically always caused by some local lesions of the pelvic colon or rectum, which produce an unnatural moisture about the anal region.

The most common sources of irritation, in the order of their frequency, are as follows: (1) Superficial ulcerations and abrasions of the anal canal. This lesion he found in about 75 per cent of all cases and attributed the frequency of its occurrence to the method of fusion of the proctodeum with the blind end of the bowel. (2) Rectitis and sigmoiditis, which are the sequelae of habitual constipation, often bring about a pruritus, since the passage of flatus allows a small quantity of mucus to escape. (3) Hypertrophied anal papillae and inflammation of the crypts of Morgagni are more often the cause of pruritus ani than is generally admitted. (4) Small polyps of the anal canal, protruding internal piles, prolapse of the rectum and anal fissure, do occasionally produce itching about the anus, but it is exceptional to find them the sole cause of chronic pruritus ani.

The author states that in order to attain permanent results, it is essential that the treatment be directed to the removal of the exciting causes. At the same time the skin in the immediate vicinity of the anus should receive appropriate treatment since it is nearly always in a state of acute inflammation from scratching or so much infiltrated and thickened as to require stimulating applications—nitrate of silver and ointments, in order to bring about a return of a normal epidermis.

SELECTED ARTICLES.

TUBERCULOUS TOXEMIA IN SURGERY.*

By ALEX. C. WIENER, M.D.,
Chicago, Ill.

Sinec the discovery of the tubercle bacillus by Robert Koch, in 1884, laboratory, clinical and sociologic research has produced such a vast amount of detailed knowledge of the bacillus itself, its propagation, and the morphologic changes brought about by its presence in the living tissue of mammals and birds, that this phase of the action of the bacillus upon the host seems to be pretty thoroughly understood. At the present time there looms up before investigators another problem, even more momentous and far-reaching in its influence upon the individual than the former, that is, the products of the metabolism of the tubercle bacilli, the tuberculous toxins. The study of these toxins, which represent a chemical admixture with the body fluids, blood and lymph, we have barely entered into. The difficulty of their investigation lies in the fact that they are chemical bodies not yet isolated by bio-chemistry. Their existence, on the other hand, is a certainty, for we clinically observe their influence upon the living tissue in a great many instances. These toxins may be paralleled in their action with the products of inner secretion, or, what appears more probable, they modify the products of organs like the thyroid, parathyroid, thymus and adrenal glands in such a manner that their physiological action upon growing tissues, more so the skeleton, is unfavorably changed. It is the merit of Poncet, professor of surgery in Lyons, France, and his pupil, Leriche, to have first studied the influence of the tuberculotoxins upon the living tissue. His theories have found so far few supporters and many adversaries. I pay a debt of gratitude in stating that the publications of Poncet have opened for me the door towards a logical perception and amalgamation of apparently disconnected facts which I have gathered in treating a good number of rotary spinal curvatures in the last decade. These observations and conclusions I now lay before you.

It is a fact generally recognized that 75 per cent of all civilized people are hosts for the bacillus tuberculosis. It is furthermore conceded that the bacillus is not transmitted from mother to fetus. Therefore, tuberculosis is not a congenital disease. Yet the clinicians teach that a certain predisposition for tuberculous infections exist in the offspring of tuberculous patients. The habitus tuberculosis is a recognized clinical picture with which every physician is familiar, and it is assumed that it is inherited. In what way? While the placenta is not permeable for even minute corpuscular elements like the tubercle bacilli, it has been entirely overlooked that there is no barrier provided for the passage of its toxins. Thus blood surcharged with tuberculous poison circulates in the new-born child. Not unaware that an eminent authority on the surgery of bones, Kirmisson, expressly states that in children afflicted with osseous deformities there is almost uniformly absent any trace of tuberculosis, my observations have irresistibly forced me to the conclusion that rachitis is the sequel of a toxemania emanating from the maternal blood. These toxins are mostly, but not exclusively, the products of the tubercle bacillus. The fact that very few children are born with manifest rachitis does not militate against my theory, for, as a rule, symptoms of rickets appear in the first year of life. Improper food and bad hygienic surroundings

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must be regarded merely as a contributory, not as the primary cause. "Rickets in the adolescent period is probably the result of extinct tubercular deposits in the individual. That a long time is necessary for tubercular toxemia to gain concentration sufficient to produce osseous changes is further proved by the fact that tubercular rheumatism is found in patients with chronic pulmonary tuberculosis of long standing. The fact that rachitis and scrofula are so closely allied that most scrofulous patients offer pronounced rickety symptoms, furnishes the strongest argument in favor of my contention. For, long since, scrofula has lost the dignity of a disease *per se*, and is now regarded as a product of the tubercle bacillus itself, or, with more probability, as a result of tubercular toxemia. I admit that my opinion as to the tubercular origin of rickets is a radical one, and one which perhaps will be violently assailed. However, I am convinced that it will gain friends proportionately to the number of observers who from this standpoint gather together sufficient clinical data. In making these investigations it is necessary that the Von Pirquet method of inoculating be systematically employed in rickety children. New tuberculin (TR), manufactured by the Hochster Farbwerke, under Professor Ruppel, hypodermically injected, one-fourth to one-half milligrams to the dose, usually produces a typical reaction.

Rickets, generally speaking, is a malnutrition mainly affecting the growing bones. There is another frequent cause for rickety changes, namely, congenital syphilis. While lues produces enough of characteristic changes of bones and joints, clinical observation must be supplemented by serum tests. Today we are concerned with the tuberculo-toxic type of rickets. The deformities produced thereby must necessarily have a tremendous influence upon the development, configuration and functions of the inner organs during the growing period. Apparently insignificant deformities of the spine and ribs cause a permanent impairment of the nutrition of these organs, and their functions must be inevitably altered during the whole period of individual life. This may be illustrated by a simple experiment. Fill a bowl with water and freeze. The ice cake formed will take the exact configuration of the inside of the bowl, the water having conformed to the minutest dent in it. His, the great anatomist of Leipsic, has demonstrated that in life the internal organs are semi-liquid ,the liver being so much so that it will receive the imprint even of a hollow organ like the duodenum. Hence, it is obvious that all internal organs must conform to the configuration of the osseous system, and thence comes the great influence of even slight deformities of the spine and ribs upon the nutrition and development of these organs during the growing period.

There are two types of deformity which, though emanating from the same source, are clinically very distinct. There is, first, the straight spine, with its physiological dorsal kyphosis and lumbar lordosis only slightly indicated. We find here the long thorax which is characteristic of the habitus tuberculosis, lack of muscular development and the various forms of indigestion. The second variety shows increase of the physiological dorsal kyphosis and lumbar lordosis, with the same lack of muscular development and the various good development of the subcutaneous fat. In both types the upper aperture of the throax is narrowed down—one might correctly speak of an osseous stenosis—the shoulder blades protrude like wings in consequence of atrophy of the muscles. The fossae supra- and infraclavicularis are visible, the cervical glands are palpable and enlarged, in some cases to the size of a hazel nut. All these cases are characterized by a rise of temperature up to 99 to 100 degrees F., or even more, and a lowering (ptosis) of the abdominal organs, especially the right kidney. These changes begin when the child enters school, they become more aggravated every year until, approaching the adolescent period, the spine gives way under

the weight of the upper extremities and the head. The sequel is a lateral rotary deviation of the spin, assuming one of its many degrees, or a decided kyphosis of the dorsal spine. The patients of the latter type are popularly designated as round-shouldered. Of the multitudinous records of the correlation of skeleton and development of the inner organs, the few are here to be mentioned which have brought to light new facts.

Virchow, in the fifth volume of his Archives, has called attention to the arrested development of the heart and aorta in fast-growing children, and has pointed out as the cause of their anemia the relative smallness of the lumen of the aorta. Freund, who was for many years obstetrician aid gynecologist at the University of Strassburg, called attention fifty years ago to the part which the upper aperture of the thorax plays in the causation of tubercular invasion of the ischemic apices of the lungs. Schmorl, the Dresden pathologist, describes cases where the first rib had left a furrow in the apex of a lung which was invaded by the tubercle bacillus. Glenard, the great clinical observer of Lyons, has coined the expression "enteroptosis" for the habitual lowering of the abdominal organs. It is now an established fact that the so-called habitus tuberculosis, which we have learned to be of rickety origin, is identical with this habitus enteroptosis.

Enteroptosis or splanchnoptosis is always the sequel of preceding rachitis, the course of development being as follows: Rachitis is produced by toxins emanating from the tubercle bacillus in the maternal organism. The resulting deformities of the spine favor the settlement of tubercle bacilli in the apex of the lungs and alter the relative positions of the internal organs. In addition, they are an impediment to the proper development of the heart and the expansion of the lungs. Deformities of the lower thoracic and lumbar spine cause a lowering of the abdominal and pelvic organs and a disturbance in their proper nutrition. It is well known that enteroptosis is found in one out of five women. The affection does not seem to be of equal frequency among men, yet I have not seen a single case of tuberculosis in men where the signs of previous rachitis and enteroptosis were missing.

While enteroptosis is the cause of a great many pathological changes in later life, it is difficult and often impossible to establish the fact that rachitis had been present in early childhood. A sure sign is found in the shape of the sterno-clavicular joint. The head of the clavicle is too bulky to fit snugly into the manubrium sterni, and in drawing back the shoulder a gap occurs between the two ends of the joint. Another material help to the diagnosis is the astragalo-tibial joint. The middle foot rotates outward when charged with the weight of the body. These cases are wrongly called flat-foot. Uniform enlargement of the thyroid gland often accompanies these findings.

Enteroptosis develops in the wake of the osseous deformities of the spine. Therefore it is manifest long before the grosser deviations of the spine become established. It must accompany every case of scoliosis. I. Israel, in his surgical clinic of diseases of the kidney, had connnected both affections as follows:

"Dislocation of the kidney is not infrequently caused by a deviation of the lumbar spine. The space allotted to the kidney becomes narrowed to such an extent that it is dislocated downward, and once mobilized, it sinks lower and lower in the abdominal cavity. The deformity consists chiefly of rotation of the bodies of the vertebrae to the left; which the lower thoracic vertebrae participate.

"Two factors are at work to narrow down the resting place of the kidneys: First, deviation and rotation of the bodies of the vertebrae to the left; second, the difformation and change in direction of the lower ribs diminish the transversal diameter of the thorax.

"In pronounced cases of scioliotic dislocation of the kidney it is impossible to luxate the kidney back into its former resting place, be-

cause there is no space left for its return. *Even slight lateral deviations of the spine are sufficient to produce a dislocation of the kidney.* I was often surprised in operating to find pronounced torsion of the vertebrae, much greater than the slight lateral deviation of the spine would have led one to suspect. This torsion restricts considerably the space for the kidneys."

Nicoladoni, late professor of surgery at Innsbruck, in his excellent work on the "Anatomy and Mechanism of Scioliosis," describes the changes of the inner organs as follows:

"It is apparent that sciolosis of the thoracic and lumbar segments must shorten the thorax and the abdominal cavity by the amount of loss in height caused by the lateral deviation of the spine. In those cases the lower ribs touch the spine of the iliac bone, the abdomen widens out, while the diaphragm is pushed forward to make room for the voluminous abdominal organs. The right side of the thorax becomes narrow, the right lung is compressed and made partially impermeable to air. The position of the pylorus is lowered; the greater and the lesser curvature of the stomach assumes a vertical position; the root of the mesentery is in a perpendicular position."

The lowering of the kidney predisposes to chronic and acute inflammation of its parenchyma and pelvis and to that primarily mechanical disturbance of the outflow of urine which results in hypodronephrosis. The lowering of the liver causes an intermitten stoppage of the flow in the biliary ducts. Subsequent chronic catarrh of the mucous membrane of the gall bladder furnishes the material for the formation of gall stones, with their sometimes sinister consequences. In many families afflicted with sciolosis I have found cases of gall stones. The formation of ulcer of the stomach and duodenum is undoubtedly due to disturbances of the arterial blood supply. Pronounced splanchnoptosis was invariably present in cases of cholecystitis, ulcer of the stomach, and in the few where both ailments were combined. In my clinic I have often demonstrated mobility of the kidneys beyond the physiological range in children under twelve years of age. Diatasis of the recti, which was once alleged to be the cause of splanchnoptosis, is but one of its many symptoms, and is found in children as well as in adults.

In our daily work we have to deal, first, with the growing generation; second, with adults afflicted with latent tuberculosis and manifest splanchnoptosis, anemia, chronic catarrhs of the respiratory, digestive and reproductive organs, sometimes in conjunction with physical and mental debility.

In children admonition on the part of parent and teacher to sit straight and walk erect has but a transitory effect, since they lack the muscular strength to maintain the proper relationship of ribs and vertebrae. In addition, the upper ribs, cartilaginous as well as osseous portion, are retarded in their growth. The muscles are not called upon for work, since the upper part of the thorax hardly follows the respiratory excursions. In consequence, the upper lobes of both lungs are not properly ventilated. The arterial blood supply and the lymph-current are reduced to a minimum. The vital capacity of the lungs, which expresses in numbers the difference between maximum inspiration and maximum expiration, is lowered to a considerable degree. The upper air-passages are often obstructed by large tonsils and adenoid growths and chronic nasal catarrhs. From all this it is easy to see how in the upper lobes of the lungs, poorly supplied with oxygen and clogged with an accumulation of mucus, the ubiquitous tubercle bacillus will find a soil which invites its settlement and multiplication. Practically the same conditions prevail in adults up to thirty-five years of age. Up to this age the thorax is yet surprisingly pliable.

THERAPEUTIC CONCLUSIONS.

The therapeutic conclusions derived from the foregoing are self-evident.

1. All obstructions of the respiratory or-

gans which curtail the intake of air are to be removed by the nose and throat surgeon. Not too much stress can be laid upon the demand that for the removal of tonsils and adenoid growths a skilled operator should be employed. Other anomalies—for instance, phimosis—must also be disposed of.

2. Mechanical treatment for the purpose of correcting all deformities of the skeleton, more so the spine and the thorax. Children and adults who begin to develop round shoulders, with subsequent hollows below and above the clavicula, are in urgent need of treatment. The family physician, when asked about deformities of the spine of lesser degrees, is yet too prone to still the anxious parents with the stereotyped remark, "Never mind, your child will outgrow that easily." *Positively harmful is the advice to wear an apparatus for support during the growing period.* A brace, may it be ever so light, pulls the thorax down, atrophies the respiratory muscles, inclusively the much-neglected diaphragm, and prohibits free respiratory excursions of the ribs. In short, it frustrates all efforts at an amelioration of pathologic conditions. Braces must be discarded as a therapeutic agency in the treatment of rickety deformities of the spine.

Instead, the treatment must meet the following three purposes: (*a*) Complete mobilization of all the intervertebral and vertebro-costal joints; (*b*) correction of the deformity of the vertebrae and ribs; (*c*) active and passive exercise of the respiratory muscles, including the diaphragm.

For the most part, (*a*) and (*b*) are effected by the application of strong rubber elastic, which is placed directly above the joints subjected to treatment, and held in extension by means of adhesive straps. For muscular and respiratory exercise, the methods devised by the Swedes are employed in a simplified manner. For young ladies over sixteen years of age it is essential to take vocal lessons. Music teachers have at their command admirable methods for the development of that most important respiratory muscle, the diaphragm. In addition, in all cases of spinal rotary curvature where there is an elevation of temperature persisting after the bowels have been thoroughly cleansed, new tuberculin is injected. Reaction after the first or second injection is invariably positive. These are repeated every sixth day, the dose being gradually increased from one to five milligrams in twelve injections. The functions of the intestines are carefully superintended. Out-of-door sleeping and an out-of-door life are insisted upon. For mental reasons school work is maintained, but time of attendance restricted. The treatment of adults affected with tuberculosis and splanchnoptosis is much the same as that of deformed children.

Instead of summarizing, permit me to urge physicians, health officers and teachers to subject to proper treatment all deformities of the spine and chest found in school children. Let school physicians and nurses make it their chief function to discover such deformities and obstructions of the air-passages. Twenty-eight State Legislatures in session during the last year have made appropriations of over $4,000,000 for the suppression of consumption. A part of this sum applied to the relief of respiratory obstructions and deformities among the great number of school children with undeveloped chests and weak muscular systems, will deprive the bacillus tuberculosis of its most fertile and promising soil. The welfare of the commonwealth demands the appointment of well-trained, experienced school physicians, with a liberal compensation for their responsible work.

When the connection between the tuberculosis and consumption of adults with osseous deformities of the chest in childhood is once generally recognized by phyiscians, the surgery of the osseous system will attain the rank which it merits. Sociology and economical politics are equally interested in the furtherance of this too much neglected branch of surgery.

I have not started out to collect these facts

to fit a theory, but I am trying to interpret the facts as they have presented themselves to me in the treatment of a good number of rickety deformities and splanchnoptosis in the past twelve years, with reference to any preconceived idea.

PROTECTIVE APPENDICITIS.

By R. T. Morris, M.D., New York. (Medical Record, Jan. 8, 1910, p. 47.)

Appendicitis is divided into two general classes, infective and non-infective. The commonest form of the trouble which the author terms "protective appendicitis," falls under the second, or non-infective class. Two reasons are given in explanation of this term: (1) "structures susceptible of acute infective processes are removed from the appendix by connective tissue replacement in the course of normal evolution, otherwise known as fibroid degeneration of the appendix." (2) Nerve filaments persist longer than most other structures in the appendix during fibroid degeneration and are irritated by the contracting connective tissue, this irritation calling out a permanent hyperleucocytosis which protects the appendix against bacterial attack.

The symptoms of protective appendicitis are of two kinds: (1) Local discomfort due to the compression of *sensory* nerve filaments by the contracting connective tissue. The local discomfort may be pronounced, or there may be merely a sensation of warmth in the appendix region varying in degree from day to day. (2) Symptoms due to the entrapping of *sympathetic* nerve filaments in the connective tissue which manifest themselves by reflex action in disturbance of the bowel function, causing these patients to be treated for intestinal indigestion, etc.

The diagnosis of this type of appendicitis is made (1) by the discovery of tenderness of the right lumbar ganglia on deep pressure; (2) the distention of the cecum and ascending colon with gas; and (3) palpation of the appendix and finding that it is harder than normal.

The treatment depends upon the indications in the individual case. If the amount of disturbance justifies it the appendix should be removed, which is more safely accomplished in this than in any other form of appendicitis on account of the leucocyte protection of the vicinity.

PREVENTION OF MALARIA.

The following summary regarding malaria and its prevention is taken from a report on malaria investigations in the island of Mauritius by Prof. Ronald Ross, of the University of Liverpool:

Facts regarding malarial fever.—In the light of modern knowledge it may be safely affirmed that malaria will not remain in a locality (1) unless the carrying agents (*Anophelines*) are numerous enough; (2) unless there is a sufficient number of infected persons to infect the carriers, and (3) if the insects are prevented from biting humon beings.

Three groups of preventative measures may therefore be employed to reduce the disease, namely: (1) Anopheline reduction, (2) case reduction, (3) isolation.

The precise details of the first method were first laid down in 1899 and have since been pu into practice with great success in both the Suez and Panama canal zones.

The second great anti-malaria measure, that of case reduction, was originated in 1900 by Koch and Celli, who, feeling doubt as to the possibility of mosquito reduction, urged that the best way of dealing with malaria would be to leave the msoquitoes alone and to cure the human patients from whom the insects become infected. Thus, though mosquitoes would contiuue to abound, they would find no parasites to carry. By the use of this method Stephansort, in New Guinea, was cleared of malaria by Koch in a few months.

The third measure, isolation or protection from bites of mosquitoes, has been unconsciously in use for a long time, the ancient Romans being already familiar with mosquito nets, while in America wire gauze screens for windows and verandas have long been employed.

Relative value of these measures.—It is obvious that any of the above measures, if completely carried out, must result in the complete suppression of endemic malaria in any locality. On comparing them, however, the first consideration which must strike the practical sanitarian is the following: Isolation and case reduction require ready compliance on the part of the public; mosquito reduction does not. To use culicifuges and mosquito nets, to screen windows and verandas, to take quinine day after day, to force one's children to take it, and to submit to constant inspections require an endless amount of trouble on the part of the people, equal trouble on the part of the authorities, expense, and perhaps friction with the community. On the other hand, no one objects to the drainage of swamps and clearing of water courses, which can be done by the authorities without troubling anyone.

Next, case reduction guards against malaria only, but isolation and mosquito reduction protect against all mosquito-borne diseases.

Again, isolation gives only partial and temporary respite from mosquitoes; mosquito reduction, where thoroughly carried out, a much greater security.

Lastly, mosquito reduction has a great general sanitary advantage which is not conferred by the other measures. It practically compels the sanitary department to maintain a minute inspection of the area in its charge and becomes therefore a sort of general insurance policy for good sanitation.

Theoretically, therefore, mosquito reduction has the advantage in every way. Practically, however,, the preference for any of these measures must be determined by local conditions, as questions of cost and feasibility have to be considered. The following general law has been enunciated by Doctor Ross: The greater the density of population the greater the advantages of mosquito reduction. In rural

areas mosquito reduction may not be nearly so advantageous. This measure is for the city, the town, and perhaps the village, not for the wilderness. For isolated houses, quinine, isolation, and treatment of small neighboring waters, if possible, are called for; larger works of drainage can be indulged in only by rich house owners, not by the authorities. Also in small towns and villages situated in the midst of large mashes or marshy forests, or flat, water-logged country, the cost of mosquito reduction may be too great.

General preventive measures.—The measures likely to do most good for the expenditure of money and labor involved are the following: (1) Measuring the amount of malaria in the locality affected. (2) Treatment of children in schools, and a certain amount of free distribution of quinine. (3) House protection. (4) Mosquito reduction where advisable (*a*) by minor works and (*b*) by major works. (5) A suitable permanent organization and an annual malaria report.

(1) The ideal way to ascertain the amount of malaria in a locality would be to search for the parasites in the blood of every person in the place. But the parasites cannot often be found even when present; too much time is taken by such an examination, and hence to estimate correctly the proportion of infected people throughout a large population would be a great and practically impossible task. The blood examination should therefore be used only for small populations. For large ones there is, however, available a much easier though less rigid method, which consists in examining the people for enlargement of the spleen, so frequent in cases of malaria. This can be done literally in a few seconds for each person. In practice, also, the examinations are usually confined to children, say, under 16 years of age. This is done for several reasons. Children are easily accessible in schools, while men are generally out at work, and women often object to the examination. But the most important reason is that adults have in many cases become partially immune.

By taking a *periodical spleen census* of school children there can be determined: (1) The localities most affected by malaria; (2) the effect of the preventive measures; (3) the children who require treatment. For this purpose a register of all children of 15 years or under with enlarged spleens should be kept at each school. This register should contain the age, sex and names of the parents of the children, with columns for noting whether the enlargement is small, medium or great, and a column for remarks. An examination of all the children attending school should be made every quarter by a medical officer, for the purpose of selecting those with enlarged spleen and making the proper entries in the register. Twice a year the figures and data in this register should be collected and forwarded to the health department.

(2) *Treatment of children and free distribution of quinine.*—The objects proposed are to improve the health of the individuals (especially children) and to prevent them from becoming a source of infection to others. Children are the principal homes of the parasites, and can be treated more methodically in schools than elsewhere. At each quarterly inspection the medical officer should indicate the children with enlarged spleen, who should be given quinine, and the dose for each. This would be regularly given to the children by the teacher until discontinued by order of the medical officer. The dosage and mode of administration of quinine should be left largely in the hands of each practitioner. It seems, however, preferable to use small and frequently repeated doses rather than occasional large ones.

(3) *House protection.*—This is suggested chiefly as a prospective vicarious measure, its object being to exclude mosquitoes in localities where, owing to large marshes or much forest, they cannot easily be reduced. The aim to be attained would therefore be the design of a type of a house which will exclude

mosquitoes, and could be adopted by the community, and failing in this a cheap method to protect the houses by wire or muslin netting could be devised.

(4) *Mosquito reduction.*—The measure is advised, as a rule, only for densely populated areas. The works required may be divided into two classes minor and major works. Minor works are those which can be continuously carried out without the special services of an engineer, such as the clearing of water channels and drains, release of surface pools, filling of holes, removal of house breeding waters, cutting of underwood, removal of grass, weeds, etc., from the margin of ponds and streams, etc. Major works are those which require to be designed by an engineer, such as the drainage of swamps, canalization of streams, etc.

(5) *Annual report.*—Here should be given the details of the work done during the year, with the cost and the results obtained, and also figures for previous years for comparison.—*Public Health Reports, January* 21, 1910.

Cat-gut or Non-absorbable Suture Material?

By Max Madlener, Zentralblatt fur Chirurgie, Nov. 1, 1910.

Madlener has employed a new non-absorbable suture in more than 800 operations during the last two and one-fourth years. The suture material (Ramiezwirn) is made from the fibre of an Indian nettle, and is prepared by soaking in a sublimate solution. The sizes used are small; he uses No. 0 and No. 1 where possible and never uses larger than No. 2. The cases in which this suture material was used covered a wide range of surgical work, among them 124 hernias, which are given in detail. Ninety-eight were unilateral, of which eight were strangulated; 26 were bilateral. One patient died of peritonitis on the sixth day from strangulation of the omentum, and one of pulmonary embolism on the thirteenth day. Of the remaining 122 only one failed to heal *per primam,* due to retention of wound secretions in the large scrotum, which suppurated. Several sutures were discharged, but there was no return of the hernia. All the others healed by first intention and in only one of them was a suture thrown off. Nearly all the patients do hard manual labor, but there has been no recurrence.

Of the goiter cases, 68 in number, three suppurated, and in the others the healing was much more rapid than in those where cat-gut had been used; cat-gut lengthens the duration of wound discharges.

Ramiezwirn can be used also in infected cases with good results, as the writer has shown in his work; healing occurs without throwing off the small sutures more often than one would think; when they are thrown off no delay of healing is observed. The small non-absorbable suture of this type is stronger, less irritating to the tissues, more easily prepared, and more easily handled (it does not slip from the grasp) than cat-gut, and has not the tendency to become untied by swelling. It is used in all cases except where foreign substances might accumulate on it, and on the inner surface of hollow organs, where its removal would be difficult.

The numbers of size above are those of the thread to be had of von Stiefenhofer, Karlsplatz 6, Munich.

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THE PHYSICIAN AS A CITIZEN.

The proper attitude of the physician toward the great duties and responsibilities of citizenship is a many-sided problem, the solution of which does not appear upon the surface. Is there any sufficient reason why he should be considered, or consider himself, in a separate class from other men with reference to the obligations of everyday life? We think not. And yet something may be said in defense, or rather in explanation, of the course he has so long pursued, and which is coming more and more to be criticised and condemned.

The word duty is as big and sacred to the true physician as to any other man. But his interpretation of it may be—in the nature of the case often must be—gauged by a different standard. To no other class of men, for instance, are presented the intimate confidences of individual and family life which with the physician constitute a part of each day's routine. Health, happiness, life itself, lie at the heart of the issues that go to make up the sum of his professional existence. However broad his interest and however clear his understanding, there is some reason why the problems which seem to him the most important and the most imperative, should be those relating to his "cases"—not to society in general. And from the viewpoint of those "cases" it is well that it should be so. A critical public soon learns to look with distrust upon the physician who concerns himself to any extent with politics, sport, or other extraneous pursuit.

But, conceding that his first duty is to his patients, should the physician voluntarily permit his whole field of vision and his entire range of activity to be contracted to the case or cases in hand? Is it necessary or advisable that he should do so? We would not even intimate that any patient needing his services should be neglected; but we would strongly and earnestly assert that no physician's full duty is comprehended in the work by which he earns his daily bread. He lives under the protection of law and participates in the privileges of a Christian civilization; and from him no less than from other men are due solemn obligations to nation, state, and municipality upon the maintenance of which the perpetuation of those benefits depends. Recognized or not, such obligations exist. Divested of their fallacies, there are no arguments to uphold the medical man in an attitude of evasion and inertia by reason of which his neighbor must bear a double burden or the welfare of the government itself suffer. And the pity of it is that this supineness upon the part of our profession, conspicuous now as in the past, is one of the factors which has contributed to the perversion of law and the demoralization of politics.

It is no excuse for the physician to plead the exactions of his practice as a reason for failure to exercise his suffrage or to manifest a becoming concern in the proper administration of public affairs. The lawyer is engaged with his clients, the pastor with his flock, the merchant with the details of his business; yet to no one of these as a class can it be charged that he habitually ignores the call of civic duty and the opportunities of enlightened citizenship.

These are general truths, so patent and self-evident as to be beyond dispute. But there are certain special considerations which should appeal even more forcibly to the dormant conscience of the profession. Admittedly the fundamental condition of all social and material prosperity is the health and vigor of the people. An awakening public is already beginning to realize this truth and to demand that its paramount importance be recognized in the making and enforcement of law. Leadership is required, intelligent, aggressive leadership which the physician alone is fitted to supply. The problems of disease have in large measure been solved—in theory. But people continue to suffer and die from preventable causes. It is hard to understand how a conscientious physician can be content to confine his knowledge and effort to individuals when he knows that the helpless masses are crying aloud for succor.

The present day agitation in health matters is the most remarkable in the world's history. Never before has popular interest been so deeply aroused and never before has the need of competent leaders been so apparent. This need the medical profession must meet or fall short of the full measure of its usefulness. To insure the results which should follow a movement so widespread and so earnest, the forces at work must be wisely directed, else they cannot fail to be wasted in fruitless effort. Whether the methods to be employed be purely educational, or seek the aid of legal enactment, the services which the physician is qualified by training and experience to render are indispensable. Almost without exception he possesses the confidence of his community in a special and peculiar degree, and, whether he elects to exert his influence in a public or strictly private way, he has a power to create popular sentiment, to mold and crystallize it, which is given to no other class of men.

Without specific mention, it may be impressed upon the physician of the South that issues of inestimable importance to the welfare of his section and the nation at large are developing and multiplying from day to day. The opportunities are great, the needs are urgent, and the cause is incomparably worthy. What policy will he—will *you*—adopt with reference to them?

Interpreted in the light of the requirements of Christian citizenship, to be a physician involves something more than the ability to diagnose and treat disease. The broad-minded, big-hearted physician of the twentieth century, his talents dedicated to a life of service, cannot refuse to recognize the larger obligations of his calling, and cheerfully and gladly assume his portion of the burden they entail.

A. B. C.

WHAT CAN BE DONE SURGICALLY FOR THE CURE OF CANCER OF THE STOMACH?

It is only in recent years that systematic efforts have been made to attack cancer of the stomach surgically on the same broad principles which have been applied to cancer elsewhere in the body. The results have been surprisingly good, but still the text books do not give a correct impression of the achievements that have already been made, nor the possibility of the radical cure of certain cases of cancer of the stomach. Indeed, this organ has been so much neglected that it has not been looked upon as a surgical disease as is cancer in every other portion of the body. No one would think of treating cancer of the lip, breast, uterus, rectum or upon the surface of the body other than surgically, and still

cases of operable cancer of the stomach are kept under observation until the opportunity for complete surgical removal has long passed. This is due to the great difficulty in the early diagnosis of the disease, and also to the fact that the accomplishments of surgery in this dread malady have not been generally appreciated. The early surgical work was of a path-finding character and upon hopelessly delayed cases according to our knowledge of dissemination, and on this dual account its showing was exceedingly poor. The same, however, might be said of the early operative work in disease of the appendix, of the gall bladder, and other surgical conditions that are now amenable to permanent cure, with slight mortality and morbidity.

The prevalence of stomach cancer is very great, and on the increase. In New York State alone there are eight thousand deaths annually from cancer. In the United States in 1900 there were nine thousand deaths from cancer of the stomach, which is more than the number of deaths from cancer of the uterus and of the breast combined.

The average mortality of the operation at the hands of half a dozen of the leading operators of the world is 22 per cent. In the face of certain death without it, it would seem that even this mortality is not too high a price to pay for the possibility of a permanent cure. It should be understood that if a single case of cancer of the stomach has ever been cured, countless others could similarly be cured under identical conditions. Kocher, out of 122 cases, had an increasing number remain well over three years, and even those who died of recurrence lived on an average of eighteen months, during which time a comparatively comfortable existence was maintained. Of those who survived longer than three years he has one patient alive and well 19 years after operation, one 10, three 8 years, one 7, one 6, and three 4 years.

The Mayo's report 29 per cent of 150 cases operated upon alive and well over three years.

There is a list of operations recorded in the last Hunterian lecture, delivered by Patterson, of London, giving an analysis of 86 cases, of whom nearly 14 per cent were alive and free from recurrence five years after the operation.

It would seem, therefore, if a patient survives that period of time that there is a very strong probability of permanent cure.

To summarize, therefore, one may say that:

Eighty per cent have a chance of immediate recovery from operation.

Twenty per cent have the chance of being alive and well for three years.

Ten per cent have a chance of permanent cure—*i. e.*, to live over five years.

To show the perfection of results that have been obtained in one series of cases the Mayo's had twenty-five consecutive resections of the stomach without a death and at another time thirty-six cases with but one death.

The improvement in the future must be in the early diagnosis and the recognition of the fact that cancer is often preceded by a long period of definite symptoms of chronic ulcer of the stomach.

From one-half to two-thirds of the cases of cancer of the stomach have this ulcer history, and we should be more on the alert to recognize this condition in the large army of people who complain of "indigestion," "dyspepsia," or "stomach trouble" and who annually pass through our hands.

Mr. Grey Turner, of New-Castle-on-the-

Tyne, who has recently written extensively on this subject says: "No cases of dyspepsia, especially in subjects over forty, should be prescribed for without a careful local examination, and if treatment is not followed by rapid improvement, all the other methods of investigation ought to be employed."

Perhaps the most concise and comprehensive summary of the diagnosis of this trouble is the following extract from a paper by Dr. W. J. Mayo: "Exploratory incision is the only way an early diagnosis of cancer of the stomach can be established. In spite of the remarkable development of laboratory methods, the main diagnostic means are clinical, and prolonged attempts to establish a laboratory diagnosis are provocative of delay, and should be discouraged. The most careful and painstaking methods of examination, including those means, should be insisted on, but they should not be unduly prolonged. A suspicion of cancer of the stomach, which cannot be disproved by known methods of examination within a short space of time, should leave the conservative practitioner to explain his suspicions to the patient, and ask for surgical consultation. He is a reckless man who, under such circumstances, does not give the patient the benefit of the doubt. The clinical history, with the chemical and biologic examination of the stomach contents, can but lead to a suspicion; and it is on this that we must act if we are truly conservative. Given a patient of the middle period of life, who, without cause, begins to lose flesh and strength, is unable to eat as before, and whose digestion is delayed, we have a right to suspect gastric cancer. If, in conjunction with this, we find loss of motility, and a delay of food in the stomach, with evidence of blood and reduction of hydrochloric acid, a tentative diagnosis of carcinoma is justified."

It is well to understand, however, that in this disease we should be careful to exclude the hopeless cases from our surgical list; particularly those who have free fluid in the abdomen and those in whom a secondary deposit may be felt in Douglas space. This is a symptom that, when present, is very conclusive. Of course, the advanced cases with enlarged glands at the root of the neck, on the left side, are well known as being inoperable, and other things being equal the younger the patient the more dissemination there is of the disease by way of the lymphatics; in older people the atrophy of these structures allows cancer a more prolonged residence without extension. The palliative operations for cancer have not been successful, and when the patient reaches that hopeless stage of advanced dissemination it is useless to prolong his agonies by an attempt to do the impossible in a surgical way, and his feelings are doubtless expressed by Cervantes when he says:

"Come, death, with gently stealing pace,
And take me unperceived away,
Nor let me see thy wished for face,
Lest joy my fleeting life should stay."

W. D. H.

NEW LIGHT ON TETANUS.

The attention of our readers is called to an article on tetanus by Drs. Porter and Richardson, of Boston, which is abstracted in this issue. If their findings in the two cases reported are verified by further investigations, our conception of the nature of the disease as well as its management must be considerably modified.

It has long been the accepted teaching that

tetanus is strictly a toxemic disease—that the tetanus bacilli remain localized at or in the near vicinity of the wound of entrance, where elaboration and absorption of the highly active toxins take place. Only a very few isolated observers have ever claimed to have found the organisms either in the blood or viscera of man, and their observations have been generally discredited or, at least, disregarded.

The laboratory work in the two cases reported from Boston was done by Dr. Richardson, whose reputation guarantees the skill and discriminating scrutiny brought to bear upon it In both cases the infection occurred through foot wounds and after the development of the disease the inguinal glands were removed under strictest antiseptic and aseptic precautions before the site of the injury was touched Pure cultures of the bacilli were obtained in each case from the glands as well as from the known infected tissues. In the second case Koch's law was fulfilled by recovering the bacilli from a rat inoculated from the pure culture obtained from the glands.

Strange to say, with the single exception of a case reported by Schnitzler in 1893, these are believed to be the only cases on record in which the inguinal lymph glands have ever been examined in the human subject, a most remarkable fact when the frequency with which tetanus develops from foot injuries is remembered.

The practical importance of this discovery, if the premises upon which it is based shall be fully established, can scarcely be estimated. Few more fatal diseases than tetanus are known. Much was hoped for from the antitoxin treatment; but the fact that in order to be effective this agent must be employed before the onset of the convulsive stage, has largely curtailed its usefulness. If it is demonstrated that the bacilli invade the lymph glands of connection with any degree of uniformity, it would seem that the ablation of those glands must be recognized as a routine indication of importance equal to that of sterilization of the wound of entrance, for they would constitute merely additional foci for the production and diffusion of the deadly toxins. Thus surgery, prompt and thorough, may come to be regarded as the main dependence of treatment and the dread disease be robbed of some of its terrors.

A. B. C.

It is announced that the *Gulf States Journal of Medicine and Surgery and Mobile Medical and Surgical Journal* has been selected as the official organ of the Southtrn Medical Association for the current year. We wish to extend congratulations to both. The arrangement should, and doubtless will, prove mutually advantageous, and the cause of medicine in the South be promoted by it.

ANNOUNCEMENTS

CONGRESS OF MEDICINE AND HYGIENE.

The International American Congress of Medicine and Hygiene of 1910 in commemoration of the first centenary o fthe May revolution of 1810, under the patronage of His Excellency, the President of the Argentine Republic, will be held May 25, in Buenos Aires, Argentine Republic.

In order to facilitate the contribution of papers and exhibits from the United States, there has been appointed by the President of the Congress, Dr. Eliseo Canton, and the Minister of the Argentine Republic at Washington, a committee of propaganda of which Dr. Charles H. Frazier (Philadelphia, Pa.), is chairman, and Dr. Alfred Reginald Allen (Philadelphia, Pa.), is secretary.

The Congress has been divided into nine sections, each section being represented in the United States by its chairman in this Committee of Propaganda as follows:

Section 1. Biological and Fundamental Matters—Dr. W. H. Howell, Chairman, Baltimore, Md.

Section 2. Medicine and Its Clinics—Dr. George Dock, Chairman, New Orleans, La.

Section 3. Surgery and Its Clinics—Dr. John M. T. Finney, Chairman, Baltimore, Md.

Section 4. Public Hygiene—Dr. Alexander C. Abbott, Chairman, Philadelphia, Pa.

Section 5. Pharmacy and Chemistry—Dr. David L. Edsall, Chairman, Philadelphia, Pa.

Section 6. Sanitary Technology—Dr. W. P. Mason, Chairman, Troy, N. Y.

Section 7. Veterinary Police—Dr. Samuel H. Gilliland, Chairman, Marietta, Pa.

Section 8. Dental Pathology—Dr. George V. I. Brown, Chairman, Milwaukee, Wis.

Section 9. Exhibition of Hygiene—Dr. Alexander C. Abbott, Chairman, Philadelphia, Pa.

It will not be necessary for one contributing a paper or exhibit to the Congress to be present in person. Arrangements will be made to have contributions suitably presented in the absence of the author.

Papers may be sent direct to the Chairman of the particular section for which they are intended, or to Dr. Alfred Reginald Allen, Secretary, 111 South 21st Street, Philadelphia, Pa.

BOOK REVIEWS

A Practical Treatise on Ophthalmology. By L. Webster Fox, M.D., LL.D., Professor of Ophthalmology in the Medico-Chirurgical College; Ophthalmic Surgeon Medico-Chirurgical College Hospital, Philadelphia, Pa. Volume of 807 pages, with six colored plates and three hundred illustrations. Published by D. Appleton & Co., New York and London.

In order to keep the reader in touch with the fundamental information regarding the origin, character and structure of the tissues of the eye, a short, concise and instructive chapter is devoted to the development of the eye. The anatomy of the eye—from its bony cavity to the delicate hyaloid membrane, is discussed in sufficient detail to refresh the memory of those who desire information along these lines, while the physiology is most interestingly interwoven. Of special interest are the illustrations of the arterial, venous, lymphatic, and nerve supplies. Most valuable suggestions as to the external examination of the eye are impressed in a special chapter. In the discussion of diseased conditions of appendages, parts or structures of the eye, the author begins with those most superficial, easily seen or reached, and follows them in order, which at once fixes the attention and impresses the importance of a rational method. A feature of the work which makes it attractive and most helpful, especially to the student or the general practitioner is, that when a diseased condition is described, and methods of treatment are discussed, then the most effective remedial agents either singly of in properly formulated prescriptions are given, and the best manner of applying is described, thus placing in the hands of those of fewer opportunities the results of his greater experience. After considering the treatment of any diseased condition, both as to local and constitutional measures, if the pathological process is one which terminates in deformity of appendage or obscuration of vision, the author then reviews the various operative procedures which have been devised and resorted to for the relief of the given condition, always enhancing and elucidating the subject by his own views as to methods. The illustrations of operations, the ample explanations of methods and technic, the after care and treatment of cases, are all most instructive and helpful, for the author has had peculiar success, and by reason of his wide experience and large opportunities is in a position to offer the best suggestions as to methods and probable results. Every chapter is complete in its presentation of the particular subject under discussion, and each one is most interesting and instructive. Perhaps the most pertinent to the general practitioner is that devoted to the ocular manifestations of general diseases, which includes constitutional conditions, diseases of the digestive tract, gynecologic affections, infectious diseases, diseases of the adjacent sinuses, cardiovascular diseases, etc.

The chapter devoted to general operative technic is of great value, offering as it does many practical suggestions which go far towards success; while that devoted to laboratory technic is especially helpful to those who desire to prepare and preserve specimens for future use and presentation of unique cases, as well as establishing diagnoses in cases of doubtful pathology and bacteriology.

It is a good book to have, an interesting one to read, a valuable one to consult, and a distinct addition to the literature upon the subject. G. H. P.

Practice of Medicine. Ninth edition, thoroughly revised. By James M. Anders, M.D., Ph.D., LL.D., of Philadelphia. Published by W. B. Saunders Co., 1909.

The rank of this work in medical literature is so well known that it needs no recommendation. Like the preceding editions, it covers the field of general medicine as nearly as it is

possible to do in a single volume of its size. This volume contains 1326 pages, including a very concise but complete index. The type is clear and the quality of the paper is such that the book is not at all burdensome to handle.

The section on tropical diseases has been considerably enlarged, and several other diseases and conditions are newly discussed in this volume, some of the more important being: Filaria philippinensis, chronic purpura, Duke's disease, acute pneumonokoniosis, essential hematuria, hereditary cerebellar ataxia, Rose-Bradford kidney, adiposis tuberosa simplex, etc.

Other new and rewritten materials are as follows: Opsonin and ophthalmic-tuberculin tests in tuberculosis, Flexner's and Wasserman's serums in cerebrospinal meningitis, pneumococcus meningitis complicating lobar pneumonia, magnesium sulphate treatment of erysipelas, mercury treatment for tuberculosis, chloseterin in anemias, Grocco's sign in sero-fibrinous pleurisy, Sibson's notch in sero-fibrinous pericarditis, Kelling's hemolytic serum test in gastric carcinoma, new theories on causes of uremia, diagnosis of embolism and thrombosis, ventricular cerebellar and pontine hemorrhage, and several other diseases of the nervous system.

Especially to be recommended are the diagnostic tables, most of which are original. Blood cultures in the diagnosis of typhoid fever has been very properly emphasized. On the other hand, however, we think greater prominence should have been given to Wasserman's reaction in the diagnosis of syphilis, and the chloretone treatment of tetanus might have been mentioned.

On the whole this edition is well abreast the times, and deserves continued recognition as a standard work on general practice.

R. W. B.

Therapeutics of the Circulation. By Lauder Brunton, London, Eng.

Consisting of eight lectures delivered in the spring of 1905 in the physiological laboratory of the University of London, and published under the auspices of the University of London, with 240 illustrations. Price, $1.50 net. P. Blakeston's Son & Co., 1012 Walnut St., Philadelphia.

BOOKS RECEIVED.

Vital Economy, Or How to Conserve Your Strength. By John H. Clarke, M.D. A Wessels, Newold Publishing Company, 156 Fifth Avenue, New York City. Price, cloth, 50 cents net.

International Clinics, Volume IV., Nineteenth Series, 1909. J. B. Lippincott Company, Philadelphia, Pa.

A Practical Treatise on Ophthalmology. By L. Webster Fox, M.D., LL.D., Professor of Ophthalmology in the Medico-Chirurgical College, etc. Six colored plates and three hundred illustrations, over 800 pages. D. Appleton and Company, New York City, Publishers.

Diseases of Children. Edited by Abraham Jacobi, M.D., LL.D., being an authorized translation from "Die Deutsche Klinik," under the general editorial supervision of Julius L. Salinger, M.D., with thirty-four illustrations in the text of over 800 pages. D. Appleton and Company, New York and London.

A Text-Book upon the Pathogenic Bacteria. For Students of Medicine and Physicians. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. Sixth eRvised Edition. Octavo of 709 pages, fully illustrated, a number in colors. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $3.50 net.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine, Medico-Chirurgical College, Philadelphia. Ninth Revised Edition. Octavo of 1326 pages, fully illustrated. Cloth, $5.50 net; half morocco, $7.00 net. W. B. Saunders Company, Philadelphia and London.

ABSTRACTS OF CURRENT LITERATURE

SURGICAL.

Two Cases of "Rusty Nail" Tetanus with Tetanus Bacilli in the Inguinal Glands.

By C. A. Porter, M.D., and Oscar Richardson, M.D., Boston. (Boston Medical and Surgical Journal, Dec. 23, 1909, p. 927.)

The accepted teaching with reference to tetanus is that it is a pure toxemia, the infecting organisms being localized at the site of the wound of entrance. The authors report two cases following injuries of the foot in which the bacilli were demonstrated in the inguinal glands

In the second case, that of boy aged 13, the pathologist was able to obtain the bacilli in pure culture both from the specimen tissues from the foot and from the glands. More notable, Koch's law was verified in each case by recovering the tetanus bacilli from rats which had been inoculated from the cultures.

Should further investigation confirm these findings and show that the bacilli do invade adjacent lymph glands, an important discovery has been made and one which will have a far-reaching effect upon the conception of the localized character of the infection as well as the treatment required. Radical removal of the lymph glands of connection may prove to be one o fthe earliest and most important indications in the management of these cases.

A. B. C.

Operative Treatment of Epilepsy.

By Eugen Bircher, Zentralblatt fur Chirurgie, Nov. 1, 1910.

The operation done is an osteo-plastic incision. The dura is usually found tense at the site of the disturbed centers, especially in genuine cases, but this tenseness is also often seen in Jacksonian epilepsy. The dura is cross-cut and turned back. The brain surface exposed is massaged, preferably with the thumb, for three to five minutes. No attention is paid to the pia mater, which is not spared, of course, by those who excise the cortex. The massage may be repeated. The dura may be closed or used to construct a valvular opening (Kocher). It is absolutely necessary to open the dura, otherwise the effect is *nil*. In one of his first cases a small band of adhesion was removed from the inner surface of the skull. The epilepsy remained. At the second operation massage was done without opening the dura. The attacks returned after a short absence. At the third operation the dura was opened and massage applied directly. The attacks slowly disappeared and became weaker until they closed. They have not returned for four and one-half years, although the patient has meantime had an iron curtain pole to fall on his head. In three other cases cures have remained after two and half, two, and one-half years.

How this massage acts has been shown in a case that died of associate troubles eight weeks after massage of the brain. At the site of massage the cortex was found to be two to three mm. thick against eight to ten mm. elsewhere; at one point the gray matter had completely disappeared, exposing the white substance.

This treatment is of value in both traumatic and idiopathic cases. W. A. B.

MEDICAL.

Acute Dilatation of the Stomach with Report of Cases.

By S. R. Hopkins, M.D., Omaha, Neb. (American Journal of Surgery, Jan. 1910, p. 11.)

After reporting in detail two personal cases in which acute dilation followed abdominal operations, the author gives the conclusions reached by other observers to the effect that the etiology of the condition consists in compression of the duodenum by the mesentery at the point where the gut is crossed by the

superior mesenteric artery.

The striking features of these cases are early, intractable, pernicious and copious vomiting, thirst, profound collapse, and abdominal distention proportionate to the degree of the gastric dilatation.

The treatment should consist of frequent gastric lavage; the administration of such remedies as physostigmine and ergot hypodermically to encourage muscular contraction of the viscus; large quantities of physiologic salt solution per rectum or by hypodermoclysis to combat shock; and the early institution of the proper posture of the patient. The last mentioned factor of the treatment is of the greatest importance, often seeming to be curative. The correct posture is easily secured by turning the patient upon the abdomen and elevating the foot of the bed three or four feet.

Surgery in the treatment of the condition is condemned, gastrostomy, duodenostomy, gastro-enterostomy, etc., having uniformly failed. A. B. C

CANCER PROBLEM.

Westbrook, in the September number of American Journal of Surgery.

A great warfare against tuberculosis is now being waged, and profession and laity uniting in intelligent action which will be productive of great results. The cause and the cure of tuberculosis is now well known, and the solution of that problem is clear. But not so with cancer, which without question is the greatest problem now before the medical world.

The rapid increase in the mortality from cancer in recent years. When all the arguments pro and con are summed up, there is no question that concer is very markedly on the increase. The postmorten statistics of old-established hospitals in Europe reveal an increasing ratio of cases found to be cancerous at autopsy. In San Francisco, the relative number of deaths from cancer increased seven times in the thirty-two years from 1866 to 1898. In Boston, the rate trebled from 1863 to 1887. In New York State, the rate almost doubled in eleven years. In Germany, the deaths from cancer in hospitals in 1879 were 6,330; in 1889, the number had risen to 24,000. It is now some 40,000 or more. It is also attacking at an earlier age, and attacks more men. In England, between 1851 and 1860, the male death rate from cancer was 195, as against the female death rate of 434. In 1901 to 1905, the male death rate had risen to the high figure of 723, as against 997 for the female death rate. At this rate of increase, the disease will soon be as prevalent among men as women. There is a remarkable decrease in tuberculosis over the same period, the death rate from tuberculosis declining one-half, while the death rate from cancer trebled.

The matter needs our interest fully as much as the matter of the great white plague. In New Jersey, in 1900, the deaths from cancer were more than those from tubreculosis. In New York State, in 1907, more than half as many deaths from cancer occurred as compared with tuberculosis, 7,000 as against 13,000. In the whole country there are approximately 80,000 cases of cancer today One woman in eight who reaches her thirty-fifth year dies of cancer. A disease entailing so much torture to the patient, and such expense and misery to those who care for him, should receive more attention from the government. Ne wYork was the first State to appropriate a modest sum to maintain a cancer research laboratory, and I am not sure any other state has followed its lead. The great need now is for the cancer hospital. This matter should be pushed before the public, and it is incumbent upon the surgeon to do so. D. E. Jr.

DERMATOLOGY.

The most effective method of treating ringworm of the scalp at present is by the use of X-Rays for the purpose of producing alopecia, which is followed by the application of parasiticides.

A discussion on "The Supposed Risks Attending X-Ray Treatment of Ringworm" was held by the Dermatological Section of the Brit. Med. Association, July 30, 1909, and reported in the British Journal Dermatology, Dec., 1909, p. 391. Dermatitis and permanent alopecia have resulted in treatment of a few cases, but the most important question was the effect of the X-rays upon the brain. In conclusion it was the general concensus of opinion that the X-ray had no effect upon the brain when properly used in the treatment of ringworm. J. M. K.

TREATMENT OF VERRUCAE PLANTARES.

R. L. Sutton (Jour. of Cut. Dis., Apr., 1909).

The author used carbon dioxide according to Pusey's method for freezing the warts. He applied a pencil of the snow for thirty to sixty seconds at first, and after thawing reapplied for a second time of thirty seconds. Boric acid was dusted over the surface. No anesthetic was required. The method was used in four cases with excellent results.

J. M. K.

EXAMINATION OF THE URINE IN SKIN CASES.

(Derm. Centralb., Apr., 1909, p. 194.)

The author concludes that there is a close connection between outbreaks of the skin and internal disorders after examining the urine in 200 skin cases.

In pruritus he finds deficient acidity, and phosphates, and has obtained good results in the treatment by using phosphate preparations.

In chronic eczema the urine is concentrated with an increase in acidity and nitrogenous excretion; there is also a slight diminution in chlorides.

In psoriasis the condition is practically the same as that found in chronic eczema, except more pronounced.

In acne and rosacea there were variations in concentration, and indican was found in 50 per cent of the cases.

In urticaria indican was found as a rule and in greater amount than in acne; otherwise the results resembled those found in pruritus.

In prurigo of Hebra, as it is so often associated with urticaria, he looked for increased indican, but did not find it.

Albumen was found in 2 per cent of the cases. J. M. K.

TREATMENT OF ERYSIPELAS.

By Barclay (Amer. Jour. Derm., Jan., 1909).

The disease can be controlled and in many instances aborted. The quick administration of calomel and large and repeated doses of quinine—half a drachm daily—are advocated. Tincture of iron is also a valuable remedy. But the most important treatment for the control and cure of erysipelas lies in local measures. The following formula has never failed, in the writer's hands, to control the spread of the disease, cut short its duration, and prevent infiltration and ulceration of the skin: Sodiri boratis, Ziv.; phenolis, Zss.; glycerine, Ziv., equal grs. Zvi. Apply hourly. Cloths saturated with lotion are constantly applied over the affected area. The writer has not observed ulceration for thirty years.

J. M. K.

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